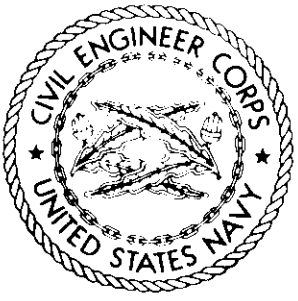
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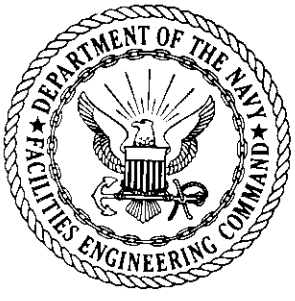
UNITED STATES NAVY


DEPARTMENT OF THE NAVY
FACILITIES ENGINEERING COMMAND


SEABEES

Southeast Asia: Building the Bases

THE HISTORY OF CONSTRUCTION
IN SOUTHEAST ASIA

By RICHARD TREGASKIS

Foreword

Though legacies of freedom and democracy are still sought for South Vietnam, the SEABEES and civilian engineers can point with pride to the modern construction throughout the country which makes economic survival possible—and which brought the Republic from feudalism to near 20th century viability in eight years. Painful as was the process, billions of dollars and millions of man-hours bespeak the American commitment to Vietnam in the form of roads, bridges, ports, airfields, telephone systems, electrical power and distribution systems, buildings, hospitals, and storage facilities.

But beyond this, significant as it is, was the example set by the engineers—and particularly the SEABEES. It was my privilege to operate the length of South Vietnam, October '65 to January '66, in amphibious operations, and then to command the Naval Support Activity at DaNang, February '66 to February '67, which provided logistic support to Free World Forces in Military Region I (nearly 100,000 strong). In that experience, no group exceeded in morale, discipline and effectiveness the Supply and Civil Engineer Corps of the US Navy, with the SEABEES being the largest and most evident of this great staff support. In a world of challenge, these people stood out as imaginative, determined, vigorous, and effective. Thanks to their inspiration and accomplishment, it was possible for the operators to plan and achieve boldly. No combat operation was ever constrained by a shortfall in the construction effort—and, as at Khe Sanh and Chu Lai, hanging on and later being victorious, stemmed directly from SEABEE efforts upgrading or completing airfield runways.

The challenge of effective military operations in the Republic of Vietnam was almost as much in the logistics areas as it was in direct combat. The unconventional nature of the war and its fluidity, covering town and country and providing no haven of absolute security, frequently put the logisticians—and particularly

the engineers—into the battle area. The lack of roads, ports and airfields put a requirement into every campaign for immediate engineer support. It was a question of a war machine which demanded a fairly sophisticated base operating in a country starting nearly from scratch. This is the story of that construction effort—to provide the essential base and lines of communication so that the brave fighting men, Vietnamese and Allies, could meet and rout the foe. In combatting torrential rains, malarial mosquitoes, heat, mud and sand, coping with shortages of even the simplest materials such as wood and crushed rock, drawing on a pipeline over 10,000 miles long with a 60 to 90 day delivery time for urgently needed heavy equipment, and living constantly in field conditions with weapons at the ready, the engineers—civilian and military—proved their mettle and stamina day after day.

Overall, it is fair to say that logistics efforts made possible the varied pace and scope of the military strategy in Vietnam. It is a remarkable chapter in the history of military construction that, in a primitive country, a modern military machine was able to operate comparatively unhampered by untimely lack of necessary base and LOC support.

This book, written to emphasize the human interest aspects of this achievement, will pass along the spirit and dedication of those engineers.

THOMAS R. WESCHLER
Vice Admiral, U.S. Navy

Preface

In early 1969, it was clear that the Southeast Asia construction program being managed by the Naval Facilities Engineering Command was of historical significance and that a documentation of the principal elements of the effort would be of value to the construction industry, the engineering profession and, particularly, to future Navy Civil Engineer Corps officers. The magnitude of the program was such, however, that a chronological description of the total effort would be extremely long and repetitive. It was decided, therefore, to develop the history through a review of how the key people involved acted and reacted as the events of the war evolved. The approach selected was to focus on the major historical events by relating the associated human interest stories which were characteristic of the operations of the Navy Officer in Charge of Construction, the contractor joint venture and the Seabees.

The selection of the author for this special undertaking was critical. Richard Tregaskis, a world renowned author and correspondent, brought to this assignment a rare combination—a natural feel for people, an in-depth knowledge of the geographic area and a recognized talent for telling a story with both historical accuracy and human interest. Mr. Tregaskis travelled extensively from 1969 through 1972. He interviewed hundreds of people from the very high levels of government to construction workers in the field. Unfortunately, he died on 15 August 1973 during the editorial review of the manuscript. Credit for the success in achieving the objective of this book rests clearly with Mr. Tregaskis. It should also be recognized, however, that he did not have an opportunity for a final review of the manuscript and this may have resulted in the inclusion of some discussion which is not characteristic of his style in order to assure more complete historical coverage.

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Illustrations

(Illustrations Figs 5, 8, 9, 14, 18 from "LOGISTIC SUPPORT IN THE VIETNAM ERA: A Report by the Joint Logistics Review Board".)

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Photographs—Continued

Photographs—Continued

(Photographs 29, 43, 58, 66, 67, 91 and 94 were taken by Richard Tregaskis.) (Photographs 49, 68, and 81 were taken by Moana Tregaskis.)


CHINA
Meng-tzu
Hsipaw
Chiang-ch'eng
Lao Cai
Cao Bang
Nan-ning
Yu-lin
CHINA
Mandalay
BURMA
Ta-lo
Bac Kan
Ning-ming
Phong Saly
Dien Bien Phu
NORTH
Ta-kaw
Ban Boteng
Muong Khoua
HANOI
Haiphong
Taunggyi
Muong Sai
Samneua
Nam Dinh
Houei Sai
Muong Houn
VIETNAM
Fang
Chiang Rai
Pak Beng
Louangphrabang
Thanh Hoa
GULF OF TONKIN
Xiangkhoang
HAI-NAN TAO
Nammehek
Chiang Mai
Nan
Ban Longtiang
Vinh
Lampang
Paksane
Nape
Hot
Paklay
VIENTIANE
Uttaradit
Sittang
Udon Thani
Nakhon Phanom
RANGOON
Tak
Sakhon Nakhon
LAOS
Phitsanulok
Sepone
Moulmein
Mae Sot
Phetchabun
Khon Kaen
Savannakhet
THAILAND
Ye
Ta Khli
Ubon Ratchathani
Pakse
Lop Buri
Nakhon Ratchasima
Surin
Attopeu
Dak To
Sara Buri
Kontum
Tavoy
Kanchanaburi
Kabin Buri
Phumi Samraong
Pleiku
BANGKOK
Watthana Nakhon
Sisophon
Lumphat
ANDAMAN SEA
Siemreab
Stoeng Treng
Phet Buri
Battambang
CAMBODIA
Kampong Thum
TONLE SAP
Pailin
Ban Me Thuot
Chanthaburi
Mergui
Pouthisat
Kracheh
SOUTH
Nha Trang
Trat
Kampong Cham
Da Lat
MERGUI ARCHIPELAGO
Krong Kaoh Kong
PHNOM PENH
Kampong Spoe
VIETNAM
Bien Hoa
SAIGON
Chumphon
Kampong Som
Can Tho
Ranong
GULF OF THAILAND
SOUTH CHINA SEA
Surat Thani
Quan Long
Nakhon Si Thammarat
Phuket
Phatthalung
Songkhla
Pattani
STRAIT OF MALACCA
Kota Bahru
Alor Setar
MALAYSIA
Mainland Southeast Asia
0 100 200 Miles
0 100 200 Kilometers

FIGURE 1

Dedication

There are mountains of war books, but very few good ones; very few that deserve to be called history.

That unhappy fact is brought about because most war books are written by the wrong people—either by historians who were not a part of the war, or by participants in the war who were not historians. Either way, there is a deficiency that cannot be concealed.

Richard Tregaskis found his extraordinary distinction in the fact that he, a professional historian, was also invariably a part of the war he chronicled. And that is why his work always has both the authenticity of gun smoke and the grace of the skilled literary craftsman.

A tireless researcher, a painstaking notetaker, an uncompromising interrogator, Tregaskis sought, in addition, to share fully in the experiences of those whose actions he described. In doing this he was fearlessly brave and two generations of American men-at-arms welcomed him as one of their own. Their stories characterized him as a spare, wraith-like shadow, who managed often to be at the very crux of the battle—always watching, asking, writing and photographing.

Apart from all of these characteristics of the consummate military historian, Richard Tregaskis brought another quality to the battlefield, a quality that distinguishes the truly great in soldier and civilian alike –he was deeply concerned about the affairs and the fortunes of the little man. A reader of *Guadalcanal Diary*, *Vietnam Diary* or of this great volume will sense, early on, that the author has no trouble deciding who, in the last analysis, is the critical personality of any war.

With all of his great talent, Richard Tregaskis could have excelled in any line of literary endeavor. Thus there had to be some final and dominant reason that propelled him toward warfare as the outlet for his extraordinary capabilities. The reason becomes plain in a simple review of what he did—he was not concerned about

other countrys' wars; he wrote only about America's wars. And that is because he was deeply—almost reverently—devoted to his country and to its well-being. Were the descriptive term "Patriot" reserved for only that tiny few men whose instinctive motivation causes them to labor, to risk and to sacrifice selflessly and willingly in their country's behalf, the elect number would surely include Richard Tregaskis.

And that is why it is so fitting that this, his last wartime chronicle, should be dedicated not just to the memory of Richard Tregaskis, Patriot, but to the great causes for which he fought until the day he died.

VICTOR H. KRULAK
Lieutenant General, USMC (Ret.)

Introduction

It has been ten years since the Navy Bureau of Yards and Docks was designated as construction agent for the Department of Defense in Southeast Asia. Little did any of us at that time foresee what this assignment would mean in terms of the effort that would be expended in this distant part of the globe within a few years. The Navy Bureau of Yards and Docks, now the Naval Facilities Engineering Command, was equal to the challenge as were its counterparts in the other military services, all of whom worked together diligently to provide the facilities needed to support a free Southeast Asia.

Aside from the fact that this was the largest single effort in military construction history, there were a number of "firsts" brought about by this program. One of these was the use within the area of hostilities of United States civilian contractor employees who were guarded by and worked with military construction troops. Another was the establishment of the position of Director of Construction to which was assigned a general officer, who was charged with the planning and review of facilities requirements, establishment of priorities, and who had the control and direction of obligational authority for all military construction programs.

Also a first was the use in a war zone of peacetime military construction authorization and appropriations procedures with slight modifications to insure flexibility, and with accurate monthly reporting so that the components of the Department of Defense and the Congress were able to follow progress.

Some of the highlights of this construction effort include the training in construction skills by the contractor consortium and the military construction units of well over 200,000 Vietnamese, and the knitting together of hundreds of small isolated villages as a consequence of the construction of hard surfaced roads and bridges to link vital bases. The volume and diversification of work performed in a few short years in a hostile environment staggers the imagination, much of which was accomplished with a great sense of urgency which invariably is the case in the exigency of war.

Because of the unique circumstances surrounding this military construction effort, halfway around the world in practically undeveloped terrain with no logistic support facilities, the preparation of an account of the events leading to its highly successful conclusion was considered advisable, both as an historical record and as a valuable document for study as it might relate to possible future programs of this nature.

Because of the mass of detail involved in such an accounting, the writing of a compendium of events related to the execution of a two billion dollar construction program in Vietnam can only be termed exceptionally difficult. For this reason, the selection of an accomplished writer was an absolute necessity. The author has portrayed accurately and faithfully the story of this outstanding feat of construction, even to providing insight into the workings of small isolated construction units, their trials and frustrations, their innovations, and the intense enthusiasm which pervaded all such groups and guaranteed the overall success of this immense undertaking.

To those uninitiated into the ways of construction, this book will probably hold little interest. However, to those who have such a background and particularly to those who played a part in this endeavor, the reading of this story is highly recommended. One of the many important contributions by the author has been his showing through many examples that credit for the successful completion of this venture cannot be attributed to any one person or even to a few, but must go to all participants individually and collectively. It has been a distinct privilege to have been one of those participants and to have been associated with so many gifted and dedicated individuals in such an arduous but rewarding venture.

EDWARD J. SHERIDAN
Deputy Assistant Secretary of Defense

CHAPTER ONE

Genesis

The Honorable Ellsworth Bunker, long-time U.S. Ambassador to Vietnam, once said that the military building effort in Vietnam was the most concentrated construction effort in all history. And it was also the largest single building accomplishment, including the huge preparations for the Normandy Beachhead in World War II. In all of history, it dwarfs such spectacular predecessors as the El Giza Pyramids, the Taj Mahal, the vast Boulder and Feather River Dams of the American West, and the famed Manhattan A-Bomb project.

Never before in history has so much building been crammed into such a small area: a tiny, tropical Asian country the size of the State of Washington, with only 12 to 13 million people and a primitive rice-growing economy, when the war started for us. Furthermore, our efforts to assist Vietnam had to be supplied and administered 8,000 air miles from San Francisco, and 10,500 from the main control center in Washington, D.C.

Flying over Vietnam, one sees whole mountains gouged into bases and new cities, with row on row of metal-topped, silvery buildings; wide airbase complexes clustered around the concrete ribbons of runways and taxiways. They were built to defend Vietnam with air power. But they also had the interesting collateral effect of preparing her way for a catapult-style launching into the modern age.

In the green, mirror-like flats of the rice-rich Mekong Delta area, the bends of the wide brown rivers are studded with naval bases, housing cantonments, and fleets of bristling patrol boats. There the South Vietnamese Riverine Fleets make ready to keep the peace in South Vietnam's most prosperous and most crowded area. Like China's rice-growing lowlands, Vietnam's rice-basket depends much on canals and rivers for travel and trade. And those water-arteries have to be policed and supervised.

On Vietnam's beautiful blue thousand-mile-long coast (location of many of the world's best beaches), huge new deep-water ports for large ships were created in incredibly short time by the massive trowel of our construction effort. The Vietnamese sea-gates to world trade have been widened by the war.

Perhaps most important in Vietnam's precipitous entry into the last quarter of the Twentieth Century is the astounding nerve system of new roads. Everywhere except in the extreme southern tip south of Ca Mau, one sees the network of gray-top highways stretching smooth and straight. It has been the principal force for rebuilding the war-shattered country and restoring commerce, the backbone and necklace of peace and self-reliance.

Everywhere in Vietnam these marks of our construction effort persist. The digs of shellholes and the more symmetrical and wider excavations of the bomb craters have faded under the overwhelming advance of normal green tropical fertility. But the roads and buildings, the ports and airfields, remain as building stones of peace. The final irony is that the hugely expensive part of our $100-plus billion war cost, the price of destructive instruments like bombs and shells and the cost of paying, feeding and sustaining our fighting troops, leave almost no visible trace as the tide of greenery proliferates. But the more-than-two-billion dollars spent on our building effort in Vietnam, less than two percent of the total, has changed her face radically, and given her a new, self-reliant countenance for the modern world.

And in the specific terms of building results: six ports with 29 berths for ocean-going, deep draft ships; six naval bases; eight jet airfields with 10,000-foot and longer runways; hospitals with 6,200 beds; 14 million square feet of covered storage; 1,600 miles of paved roads; and housing for 450,000 Vietnamese servicemen, and their dependents.

While the total effort involved many Military Engineer units—Navy Seabees, Marine and Army Engineers as well as Air Force units, most of the building in Vietnam was done by an American building consortium with a name more complex and unpronounceable even than many of the large legal and advertising firms. It was Raymond, Morrison-Knudsen, Brown & Root, and J. A. Jones, the largest pool or consortium of construction firms in American history, even larger than the combines which built the Bonneville and

Feather River Dams and the Manhattan A–Bomb project.

The Raymond, Morrison-Knudsen, Brown & Root, and J. A. Jones combine was rapidly abbreviated by Navy men used to jaw-breaking monikers into the handy designation RMK–BRJ. In the early years of the war, 1962–65, Raymond and Morrison-Knudsen were the contractor-combine RMK. In late 1965, Brown and Root and J. A. Jones were added.

This is the score only for Vietnam. It doesn't include Thailand, where at a cost of nearly $500 million the effort produced six jet airfields with runways at least 10,000 feet long were built or rebuilt along with modern highways linking all parts of the country, cantonment areas across the length and breadth of the nation, and major improvements to the port area of Sattahip, on the Gulf of Siam. And the biggest airfield in all of Southeast Asia was built at U Tapao, near Sattahip at a cost of $140 million.

The giant engineering consortium, Dillingham, Zachry and Kaiser, carried out a large share of our major construction effort in Thailand. Another combine, Utah, Martin and Day, was close behind in size. And many smaller engineering and construction firms, some of them Thai and Vietnamese companies, helped to shape the total accomplishment in Vietnam, and Thailand, and Laos.

Most remarkable item about the construction efforts of the great consortiums in Vietnam and Thailand is that their labor forces were almost entirely Vietnamese in Vietnam, and Thai in Thailand. Only the construction bosses and the foremen were Americans and "Third Country Nationals", meaning mostly Filipinos and Koreans with a minor admixture of Canadians and Europeans. Thanks to the on-the-job training of the contractor forces, 200,000 Vietnamese attained some degree of familiarity with modern building trades, another leap from the Middle Ages into the Industrial Age. And in the much-smaller effort in Thailand, the figure was still more than 40,000.

The figure is particularly high in Vietnam not only because the projects were so large, but also because the Vietnamese showed a marked preference for staying near his home area, and each time a project moved, new work forces had to be trained.

In both Thailand and Vietnam, large numbers of foremen were developed amongst the locals, and a few men and women rose to the jobs of bosses of larger areas of enterprise and numbers of people.

It was a considerable source of Vietnamese pride that the entire staff of the rock quarrying operation at Nui Sap was Vietnamese as early as 1970. Also, that when the RMK–BRJ headquarters for Vietnam closed out in 1972, 90 percent of the men and women running the computers in Saigon were Vietnamese.

There is no denying that in this war the civilian contractor forces did the majority of the building. It was different from the building stories of World War II and Korea, where American construction in the field was almost totally carried on by military engineers. The widespread operation of civilian contractors in the Vietnam war zone was highly unusual, perhaps unique, and was dictated by and possible because of the specific conditions that existed: The presence of a mobilized capability when the major requirements emerged, the gradual evolvement of the U.S. committment and the nature of the conflict.

But that is a long way from the whole story. In the Vietnam war, the famed military engineers of the U.S. Army, Navy, Air Force and Marines reached a peak of more than 55,000. That was during the maximum effort of military construction and military buildup in 1966–68. They too hung up an impressive record.

Their role was compounded by the fact that they generally won the assignment in the face of the largest amounts of danger caused by our military enemies, the Viet Cong and the North Vietnamese Army. Additionally, in this war the military engineers had to build highly complex facilities to fit the modern modes of war: like jet airfields, better highways, housing for the sophisticated machinery of a modern army, navy and air force, including computers and electronics.

Seabees were the first of the fighting engineers to go to war in the Vietnam struggle. These famed descendants of the Roman military road-builders were on the Vietnam scene ten years before the Tonkin Gulf Declaration of 1964.

The Seabees in World War II, under "King Bee" Admiral Ben Moreell, their founding father, had built "instant" piers, bases, roads, and airfields as our forces drove the Berlin-Tokyo Axis from the wide section of the globe they had seized.

In the years between World War II and Vietnam, the Seabees had kept in shape for their rugged building job in many parts of the world. Trimmed almost to extinction in the phase-down of our military forces in 1946–49, the Seabee nucleus-in-readiness had

shown the old spirit, strength and nerve in the bloody test of the Korean war, 1950–53.

In the Korean emergency, the Seabee force expanded again under the forced draft of national need. From the low post-WW II level of 3,300, they grew to 14,000, and ten fighting-building Mobile Construction Battalions.

The Army Engineers, also trimmed to the bone after WW II, were doubled in size in the Korean war, fulfilling their classic role of building for U.S. forces in motion.

Then, in the usual cut-back of military after a war, the military engineers were chopped back to a force-in-readiness again. But both Seabees and Army Engineers stayed very much alive.

The Seabees stayed in shape through strenuous building assignments at such far-flung places as the Philippines, Lebanon, the South Pole, Ecuador, Chile, Upper Volta, the Central African Republic, Alaska, Argentia, Newfoundland, Puerto Rico, the West Indies and Cuba.

When the U.S. Southeast Asia involvement grew to a massive commitment to aid South Vietnam in 1965 and 1966, the Seabees were pioneers in building expeditionary-force-type bases.

And the Army Engineers did as the Seabees did: they built cantonments, bases, airfields, roads, port facilities and housing for Vietnamese military dependents.

Air Force "RED HORSE" squadrons, newly formed at the beginning of our buildup in Vietnam, worked on barracks, protective storage facilities for planes, rocket and mortar damage, and living and working spaces around the airbases. The acronymic name, "RED HORSE," stands for "Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineering". The Marine Combat Engineers, four battalions strong, worked through shot and shell to help build frontline bases and roads for the Marines in the embattled First Military Region closest to the border of North Vietnam.

The Seabees' aggressive building efforts in Vietnam ranged from Nam Canh at the barren southern tip of Vietnam, to Con Thien and Gio Linh at the northern-most frontier. Con Thien and Gio Linh are within sight of the Ben Hai River which separates South Vietnam from her Communist neighbor to the North, the People's Republic of North Vietnam.

Seabee battalions, detachments and teams built, and when neces-

sary fought, from Con Thien and Dong Ha in the north, way out to Chau Duc, and Phu Quoc on the western limits of South Vietnam. And they also built, in near miraculously short time, one of our northern-most airfields at Quang Tri, a mere 30 miles from the border of North Vietnam.

The Seabees further developed their team concept to accomplish the Vietnam and Thailand mission. These 13-man teams were composed of all-around excellent construction men with special training in Southeast Asian language and background, and were organized to teach the people in the undeveloped areas of Vietnam and Thailand how to build for themselves with modern equipment. And that program was consistently so successful that AID (Agency for International Development) kept asking for a doubling and redoubling of the numbers of teams, and usually getting them.

* * * * *

In overall charge of the building effort of the contractor consortiums was the Naval Facilities Engineering Command, known as NAVFACENGCOM. Until May 1966, this same outfit had been known as the Navy Bureau of Yards and Docks; it was the parent organization of both the Navy Civil Engineer Corps and the Seabees. BUDOCKS, later NAVFACENGCOM, was the designated construction agent for the Southeast Asian area and oversaw the whole operation for the Department of Defense.

With such a vast management responsibility, NAVFACENGCOM, after endless agony, and much blood, sweat and tears, and a tremendous track record in building, came up with a new system of construction management called Level of Effort. This method, evolved in early 1967, enabled the Navy to match its contractor capability to the workload and to achieve a high level of efficiency even in the face of rapid changes in overall military planning brought about by the tactical situation in Southeast Asia. As RADM Walter M. Enger, the NAVFAC Commander, said in 1970: "We have learned methods so sensible that we could go into another emergency situation tomorrow and handle it efficiency."

The Vietnam war had a new and difficult shape; it was a sore trial because its structure and tactics were new to us. But in one sense, it was like every previous war in history: the engineers and builders have left many permanent, useful by-products. For shellholes and bomb craters are swallowed up in engulfing greenery, but what the builders wrought, (with less than two percent of the total cost) remains. And this is especially important to a primitive country like Vietnam with a tiny gross national product, a nation facing a tremendous job of national development to keep up with a fast-moving world and to defend itself. The work of our builders will be of overwhelming importance in the future of Vietnam.

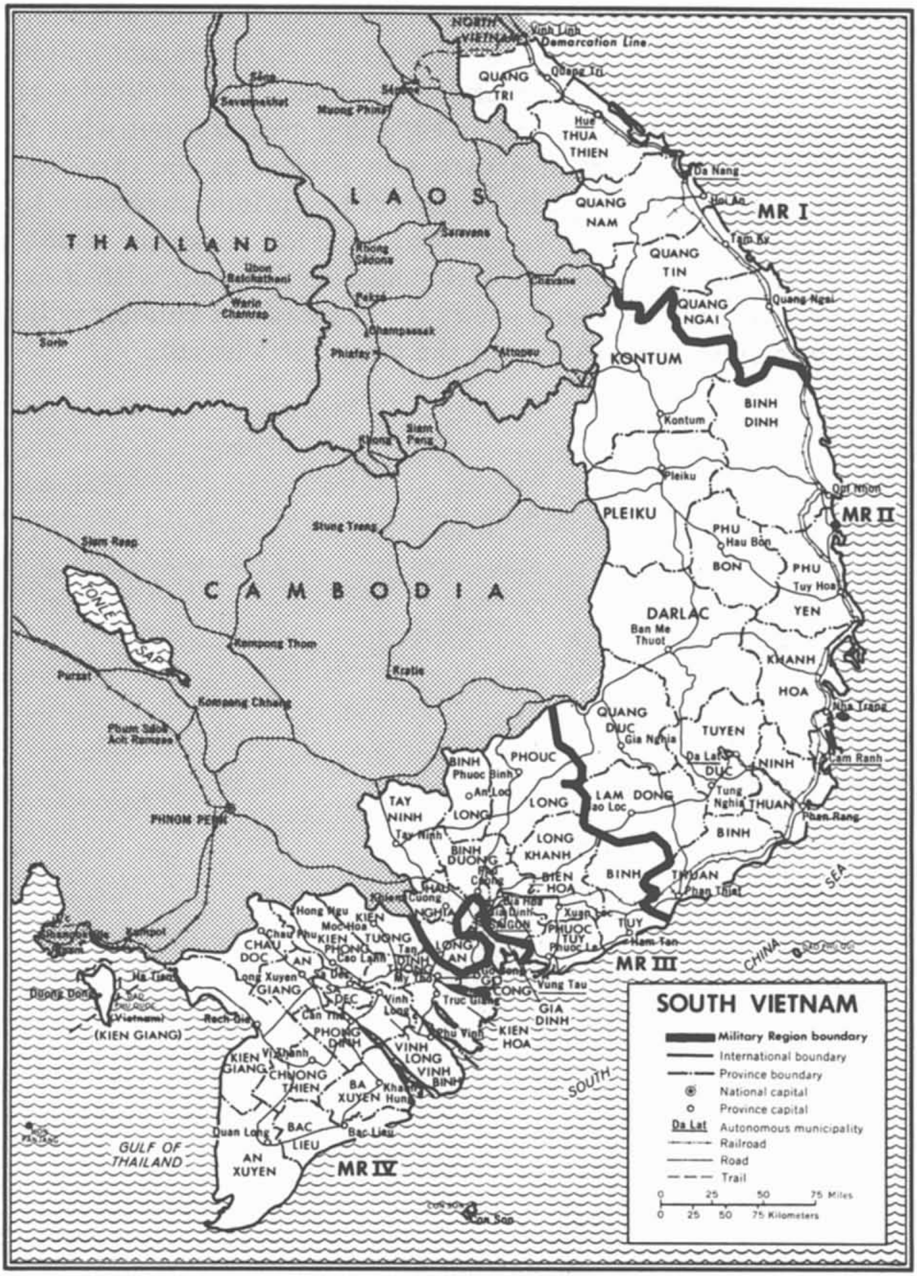
NORTH VIETNAM
Vinh Linh
Demarcation Line
QUANG TRI
Quang Tri
Hue
THUA THIEN
Da Nang
Hoi An
QUANG NAM
MR I
QUANG TIN
Tam Ky
QUANG NGAI
Quang Ngai
KONTUM
Kontum
BINH DINH
Pleiku
PLEIKU
Qui Nhon
MR II
PHU BON
Hau Bon
PHU YEN
Tuy Hoa
DARLAC
Ban Me Thuot
KHANH HOA
Nha Trang
QUANG DUC
Gia Nghia
TUYEN DUC
Da Lat
NINH THUAN
Cam Ranh
Phan Rang
LAM DONG
BINH THUAN
Phan Thiet
PHUOC LONG
LONG KHANH
BIEN HOA
BINH DUONG
TAY NINH
Tay Ninh
BINH LONG
An Loc
Xuan Loc
PHUOC TUY
Phuoc Le
Vung Tau
GIA DINH
SAIGON
MR III
LONG AN
KIEN TUONG
KIEN PHONG
Cao Lanh
CHAU DOC
AN GIANG
Long Xuyen
SA DEC
Can Tho
PHONG DINH
VINH LONG
VINH BINH
KIEN HOA
Truc Giang
Phu Vinh
KIEN GIANG
Rach Gia
CHUONG THIEN
BA XUYEN
BAC LIEU
Bac Lieu
AN XUYEN
Quan Long
MR IV
Con Son
Ha Tien
(KIEN GIANG)
GULF OF THAILAND
SOUTH CHINA SEA
LAOS
THAILAND
CAMBODIA
Savannakhet
Muong Phine
Saravane
Khong Sedone
Ubon Ratchathani
Warin Chamrap
Pakse
Champassak
Attopeu
Khong
Siem Pang
Stung Treng
Siem Reap
TONLE SAP
Kompong Thom
Kratie
Pursat
Kompong Chhnang
PHNOM PENH
Kampot
SOUTH VIETNAM
Military Region boundary
International boundary
Province boundary
National capital
Province capital
Da Lat Autonomous municipality
Railroad
Road
Trail
0 25 50 75 Miles
0 25 50 75 Kilometers

FIGURE 2

CHAPTER TWO

The Emergency Builds

The most famous event leading to the extensive United States involvement in the Vietnam war was an attack by torpedo boats of North Vietnam, in the Gulf of Tonkin, on August 2nd and 4th, 1964. The first assault with torpedoes and machine guns was upon the destroyer U.S.S. MADDOX.

The hostile maneuvers continued on the 4th of August. The MADDOX and a companion destroyer, the TURNER JOY, took evasive action, and fighter squadrons from the accompanying carrier force made sweeps. On August 5th, President Johnson on a nation-wide TV broadcast announced: "Action is now in execution against gunboats and certain supporting facilities which have been used in these hostile operations." The U.S. Congress voted support in the brief Tonkin Gulf Resolution of August 7th, and a new stage in the Vietnam conflict was on.

We had been involved previously in a much more fragmentary way.

The Japanese ended World War II and officially surrendered on board the U.S.S. MISSOURI in Yokohama Harbor, September 2nd, 1945. And on the same day, Ho Chi Minh, the leader of the Viet Minh, a Vietnamese political and military force, proclaimed the Democratic Republic of Vietnam. Viet Minh meant literally only Vietnam League or Body. It was a militant Communist force, but also a nationalistic one.

Now the time for a choice was at hand. Indo-China had been a part of the French colonial structure before the Japanese attack and conquest in 1940. That French colonial territory included Annam, Cochin and Tonkin (the parts that became Vietnam); also Laos and Cambodia.

The tide of nationalism against colonialism was strong in Asia

as World War II ended in China, India, Indonesia, the British Straits Settlements, and Burma. Often, as in Europe, Asian communism took advantage of the nationalist wave.

Initially, British and Chinese troops occupied the Vietnam territory, and the French moved gingerly in their former colonial territory. Ho Chi Minh, in North Vietnam, biding for time to build his forces against the French, agreed to become part of the French Union, and to undertake negotiations to determine the exact relationship of his regime with France. But negotiations rapidly broke down. In 1946, the French Indo-China war, between the Viet Minh and French colonial troops broke out into open conflict. The Viet Minh tactics were both political and military. During the early periods of the war, they made many small-scale attacks against their outposts and columns, while they built strength for a more conventional war.

In 1949, the imminent Communist conquest of China and subsequent Chinese aid to the Viet Minh led President Truman and Congress to extend limited economic and military assistance to the French and Vietnamese. The U.S. Economic Aid Program which operated during the 1950–1954 period recognized the predominant role of French personnel in the area and took the primary form of financial and material support, much of which was used for construction projects.

In September, 1951, the United States signed an agreement with Vietnam to provide direct economic assistance. Under the terms of this Agreement, nonmilitary construction work was undertaken under USOM, the United States Operations Mission and later USAID, or United States Agency for International Development. Military aid was also provided under a M.A.A.G. (Military Assistance Advisory Group).

In July of 1952, the first U.S. Ambassador, Frederick A. Nolting, was assigned to South Vietnam, and the Vietnamese Embassy opened in Washington. At that time, nearly 200 ships bearing U.S. civil and military aid had docked at Saigon.

In 1954, the French colonial forces under General Henri-Eugene Navarre suffered a crushing psychological defeat at the fortress of Dien Bien Phu, 200 miles west of Hanoi on North Vietnam's border with Laos. Here, despite the aid of several squadrons of American C–47 transport planes, the French force of 15,000 men was defeated by about 50,000 Viet Minh combat troops under General Vo Nguyen

Giap. Giap later became Ho Chi Minh's military commander and remained in charge during our Vietnam involvement.

The Dien Bien Phu debacle, and French war weariness, led to the Geneva Accords of May 1954 which, on a supposedly interim basis, separated North and South Vietnam at the 17th Parallel along the line of the Ben Hai River. In the North, the Communists set up the Peoples Republic of Vietnam, under the Presidency of Ho Chi Minh. The French appointee, the Emperor Bao Dai, ruled the south. Bao Dai had as his Premier a prominent political leader, Ngo Dinh Diem.

In September of 1954, at the founding session of SEATO (the Southeast Asia Treaty Organization) in Manila, eight nations signed a protocol agreement that the free territory of Vietnam, South Vietnam or the Republic of Vietnam, could be given economic and military assistance if the RVN requested it.

These signatory nations were the United States, Australia, France, New Zealand, Pakistan, the Philippines, Thailand and Great Britain.

In September, 1954, Ngo Dinh Diem wrote a letter to President Eisenhower and asked for further military and economic aid from the United States. On October 24th, the President promised that additional American assistance would be given. Under this program, military construction efforts by the United States were initiated by American personnel.

That year, and the next, an estimated one million refugees moved from the Communist State of North Vietnam to the south. The largest group of refugees was evacuated by French air and surface transportation. Some came under their own power. But about 310,000 were ferried by U.S. Navy and Military Sea Transportation Service ships. The LSTs primarily carried heavy loads of French military equipment: 8,135 vehicles and 68,757 tons of cargo.

It is little known that about 90,000 South Vietnamese moved north at this time to the Communist nation. From this group, and from Communists that stayed behind in the south, came the hard core of leaders who went back to South Vietnam to organize the guerilla movement against Ngo Dinh Diem.

One of the first U.S. military units to be involved in this movement from the North to the South (officially called "Passage to Freedom") was a detachment of Seabees from Amphibious Construction Battalion 1 under LCDR Louis N. Saunders, Jr. The

Saunders detachment helped to establish a refugee camp at the seacoast resort of Cap St. Jacques (later given the Vietnamese name Vung Tau). And they also helped set up recreation facilities for American sailors on the beach at Da Nang (then called Tourane), the French naval base town in the northern part of South Vietnam.

Under the Geneva Agreements, both Vietnamese states were to be provisional, and there was to be a plebiscite to determine the future—would they remain apart or reunite. Actually, no plebiscite was held. However, Premier Ngo Dinh Diem of South Vietnam held an election in South Vietnam on October 23rd, 1955 that ousted the French-chosen Emperor Bao Dai as Chief of State. A provisional constitutional act of the South Vietnam National Assembly in the former French Opera House at the center of Saigon proclaimed South Vietnam a republic and Ngo Dinh Diem its first president, October 26th, 1955. Ho Chi Minh was firmly in control in the North.

In February of 1955 the U.S. Joint Chiefs of Staff expanded the mission of MAAG Indo-China, giving it authority to organize and train as well as equip the forces of South Vietnam.

At first, this new mission was handled by a joint French and U.S. staff. The designation of the outfit was by the acronym TRIM (Training Relations and Instruction Mission).

But under pressure from Ngo Dinh Diem, the French were gradually squeezed out—as the Vietnamese changed street names to Vietnamese and expropriated the former French government buildings.

In October 1955 a dispatch from the Commander in Chief Pacific, CINCPAC, at Pearl Harbor redesignated MAAG Indo-China as MAAG Vietnam.

In the wake of the Geneva Agreement of 1954, the former French Indo-China had been disassembled into Vietnam, North and South varieties, on the east coast; and two kindgoms flanking it on the west. The southern of these two kingdoms was Cambodia, a squarish mass along the shore of the Gulf of Thailand, and the long, thin, landlocked country of Laos running north and south above it, parallel to the long coastal shape of Vietnam on the South China Sea.

The age-old independent Kingdom of Thailand (between the size of Texas and California in area) sprawls to the west of this assemblage of small nations. It runs from four degrees north of the

equator and the boundary of Malaysia nearly 1,200 miles to the northern fringe of the tropics. The position is central in Southeast Asia, with Burma beyond it, and Malaysia, Singapore and the giant, rich and populous island state of Indonesia to the south.

The Thais had been quick to develop in the modern age. Bangkok was an up-to-date city with good communications, and the Thais were sympathetic and bright, a nationality whom American habitues consider, in short, a beautiful people.

The first Navy construction office for Southeast Asia was set up in Bangkok in December of 1955 with the long-winded title: "Officer in Charge of Construction, NOy Contracts, Bureau of Yards and Docks, Thailand" (OICC Thai). The first OICC was CAPT Garland M. Inscoe.

CAPT Inscoe's job was to administer $18 million worth of design and construction contracts for airfields, bases and other military assistance in Thailand. This was nicknamed the "Sarit Grant" after Marshal Sarit Thanarat, then head of the Thai armed forces and after a coup in 1958, the leader of this constitutional monarchy.

The Bangkok OICC office also managed contracts for the U.S. Military Assistance Programs in Vietnam, Laos and Cambodia. The office was located in Thailand because at that time the largest amount of work was there, and Thailand was also centrally located to oversee all of the Southeast Asian programs.

The OICC Thailand was constituted of a new blend of civilian and military construction talents, with a very high percentage of civilian workers. A contract was awarded for management and engineering services to Tippetts-Abbott-McCarthy-Stratton (TAMS) for the design, engineering, supervision and inspection of construction. This contract was to augment the small organic staff of the OICC. Of the total 100-man-and-woman staff of OICC Thailand and TAMS, only two were Navy personnel, besides the OICC himself. About two-thirds of the 100 were Thais, the rest being U. S. civilians.

In February of 1956 the Assistant Secretary of Defense (International Security Affairs) issued a memorandum which assigned Military Assistance Construction for Cambodia, Laos, Vietnam, Thailand and the Philippines to the Navy. In the same memorandum, the Army was assigned Turkey, Iran, Pakistan, Taiwan and Korea.

Later the Assistant Secretary of Defense (Installations and Logistics) also assigned Military Construction in this area to the

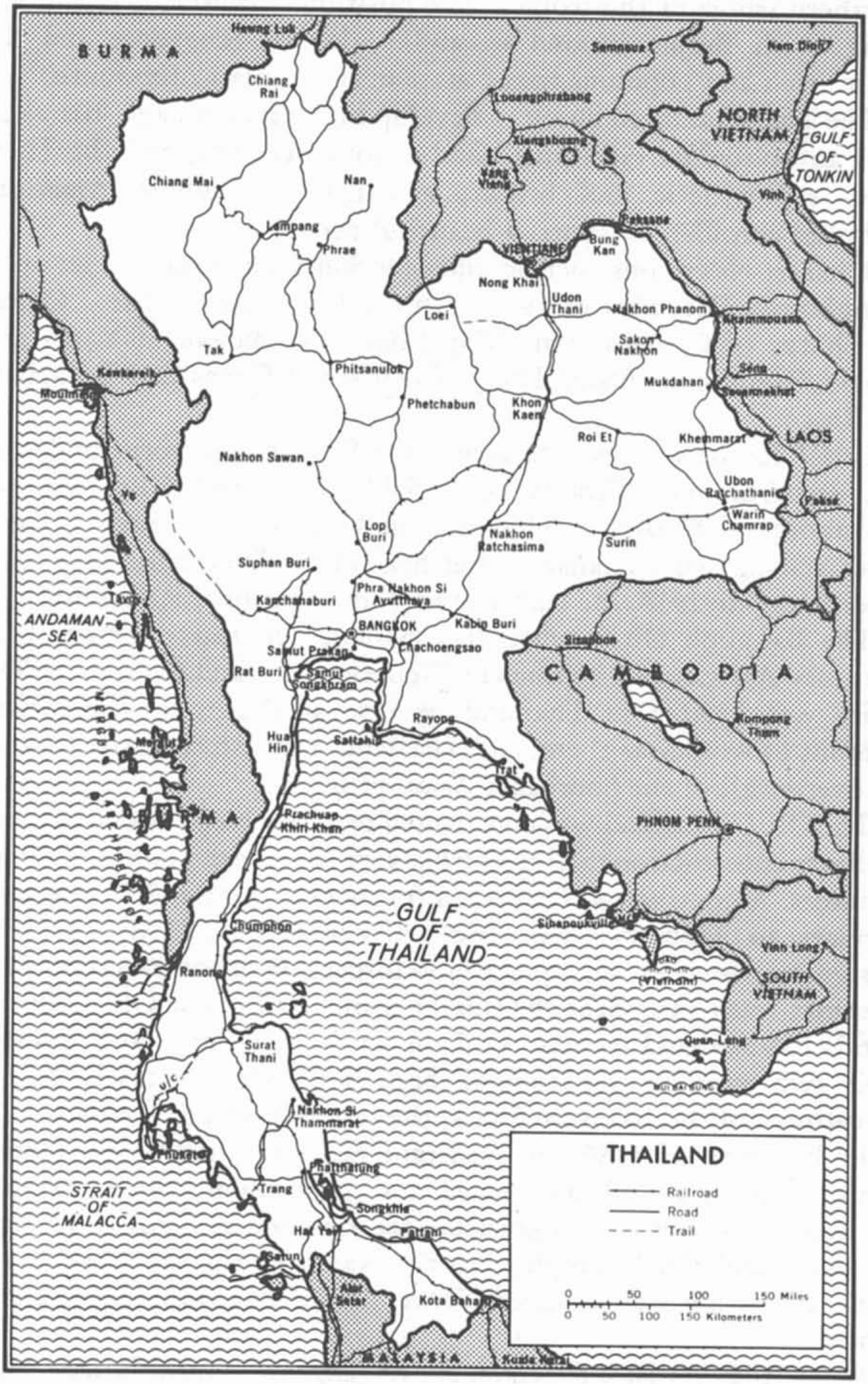
BURMA
Chiang Rai
Chiang Mai
Nan
Lampang
Phrae
Tak
Phitsanulok
Phetchabun
Nakhon Sawan
Lop Buri
Suphan Buri
Kanchanaburi
Phra Nakhon Si Ayutthaya
BANGKOK
Samut Prakan
Samut Songkhram
Rat Buri
Chachoengsao
Kabin Buri
Hua Hin
Sattahip
Rayong
Trat
Prachuap Khiri Khan
Chumphon
Ranong
Surat Thani
Nakhon Si Thammarat
Phuket
Phatthalung
Trang
Songkhla
Hat Yai
Pattani
Satun
Kota Bahru
MALAYSIA
LAOS
Louangphrabang
Vientiane
Nong Khai
Udon Thani
Bung Kan
Loei
Nakhon Phanom
Sakon Nakhon
Mukdahan
Khon Kaen
Roi Et
Khemmarat
Ubon Ratchathani
Warin Chamrap
Nakhon Ratchasima
Surin
CAMBODIA
Kompong Thom
PHNOM PENH
Sihanoukville
NORTH VIETNAM
GULF OF TONKIN
SOUTH VIETNAM
ANDAMAN SEA
GULF OF THAILAND
STRAIT OF MALACCA
THAILAND
Railroad
Road
Trail
0 50 100 150 Miles
0 50 100 150 Kilometers

FIGURE 3

Navy. The Army was given military construction in Japan, and most of Europe. The Air Force was given building responsibilities in the United Kingdom of Great Britain and Northern Ireland.

The underlying logic of this centralization of construction authority was to avoid duplication of organizations by the several United States military engineering groups with resulting savings in overhead costs.

The distinction between types of construction noted above may need clarification. Military Assistance Construction was an integrated part of a total military assistance program in support of a foreign government military organization—a program under the control of the Assistant Secretary for International Security Affairs, while Military Construction was in support of United States military forces and was under the control of the Assistant Secretary for Installations and Logistics.

The Director, Pacific Division, BUDOCKS, RADM J. F. Jelley, toured the Southeast Asia scene in February of 1956 and wrote a vivid report of what was going on, or mostly what building activity was not going on there but should have been, in these halcyon days. On the subject of the construction plans of the MAAG in Vietnam: "This is really a confused, dispirited outfit. . . . There has been inadequate planning, no control of Vietnamese plans or criteria and no monitoring or follow-up of the program."

RADM Jelley went on to propose a remedy for Vietnam: A small group of Navy engineers should be sent immediately from the BUDOCKS installation in the Marianas (Area Public Works Office) and four more from OICC Thailand's TAMS, to Saigon to advise and monitor the construction program. Most of his recommendations were followed.

RADM Jelley had great faith in the efficiency and quickness of the Civil Engineer Corps of the Navy. "American advice and efficiency is required to insure honesty in their (the Vietnamese) business transactions."

On the MAAG Cambodia: "This is a small, well-organized unit that has planned well and will be ready to move when the 1956 funds become available. . . . Sufficient local design and construction ability exists to carry out the small DFS (Direct Forces Support) program."

The programs in both Vietnam and Cambodia were small com-

pared to Thailand. And the OICC office in Bangkok wasn't active in Laos until 1957.

A spate of "Sarit" projects was being tackled in 1956. Included were Thai Army, Air Force and Navy facilities scattered from Chiengmai at the northwest to Hadyai on the Malaysian border.

The Thai Royal Air Force projects were the most extensive: Extension of the runways, parking aprons and taxiways at Korat and Tahkli, located respectively northeast and north of Bangkok. Also new concrete runways, 7,000 feet long, at Udorn (close to the northern Laos border), Chiengmai (even farther north and west) and the Burma border, and Ubon (close to the southern Laos border). Udorn, Ubon and Tahkli, vastly expanded, were to become centrally important in the air war against North Vietnam and the North Vietnamese armies in Laos and Cambodia.

The Thai Army camps were at Chiengmai, Udorn, Ubon, Bangkok, Lop Buri, Rat Buri, Kokethiem, Sara Buri, Prachin Buri, Pram Buri in the center; and in the south, Nakhon Si Thammarat and Hadyai.

Royal Thai Navy projects, all at Sattahip on the Gulf of Siam, were a pier, seawall and hospital.

Almost all of this 1956 work was carried out by Thai contractors. The largest of these was Christiani and Nielsen, Ltd., working in a joint venture combine with the American building firm of Vinnell.

President Ngo Dinh Diem's new government of South Vietnam, the Republic of Vietnam, in 1956 asked the U.S. for help in surveying her roads. The few roads in the country had been built under French rule and, after World War II and the French war against the Viet Minh, were in a sad state of disrepair.

Now, since independence, the struggling, impoverished new nation was harrassed by further raids by the Viet Cong guerrillas. The RVN asked for an engineering survey team and offered to provide a military escort for them.

A team of Seabees and Army MAAG officers and men were assigned to the job. There were five Navy CEC officers, six men from Naval Mobile Construction Battalion 10 and one civilian engineer. The overall leader was CDR Woodrow M. Brown in command of NMCB-10.

They travelled by jeep (but also on foot) by the trails which cross country from Da Lat in the central highland of South Vietnam to the

seacoast. One overland party started from the town of Dak Sut and moved cross-country all the way to Tourane (now Da Nang). This party was led by LT H. E. Cobb and LTJG R. G. Ghormley. Also in this pioneer party were Chief Builder W. H. Shannon, E. E. Tulles, a U.S. civil service civilian engineer, and an officer and non-com from the Military Assistance Advisory Group of Vietnam, Army LTCOL Lee Gibson and Master SGT Charles Helton. The group, which started out with several jeeps, trailers and mules, was to go as far as they could by road, and make the rest of the trip on foot. They were accompanied by a guard of Vietnamese infantrymen.

After a four-day jeep ride the automobile section of the trip was finished. The road disappeared. The expedition had to go on foot, along the trails.

Others of Naval Mobile Construction Battalion 10 surveyed those sections of road which could be driven by jeep. CDR Brown's parties covered 1,800 miles of road in two months of work.

The surveyors generally found that the bombers of World War II, the guerrillas of Viet Minh, and the newly emerging guerrilla groups of the Viet Cong had destroyed most of the bridges and made the paved roads most uncomfortable to traverse by digging trenches across them, generally every 50 feet or so. The Vietnam army engineers, with some help from our MAAG logistics forces, had filled in the ditches with badly compacted earth and the result was an uneven pavement as the fill settled.

President Diem went to Washington to visit with President Eisenhower in the Spring of 1957, and they made a joint declaration of aims: The "peaceful reunification" of Vietnam, and he was given a specific promise of American political and military aid.

A building program was launched in Vietnam that year with Capital Engineers and Johnson, Drake and Piper under USOM, the United States Operation Mission.

The program approximated $80 million and involved restoring bridges and sections of roads along the French Routes One and Nineteen.

In the year 1957, the author borrowed a jeep from the U.S. Information Service in Saigon and drove Route One. We followed the tortuous route inland and up the coast the 650 miles to Da Nang and Hue. Hue is only 60 miles south of the 17th Parallel and the Ben Hai River, the border with North Vietnam.

We found that almost all of the bridges had been dropped by bombers or by explosive charges set by the Viet Minh and more recently by the Viet Cong. The narrow black-top road was a nightmare to traverse as the vehicle thudded over the badly repaired trenches dug across the highway by the Viet Cong.

Many of the river crossings were manageable only by riding a rickety ferry which would take your car aboard. I saw after-effects of fresh raids by Viet Cong guerrilla forces made on government outposts along the roads, and driving at night was frequently unsafe. We crossed the tracks of the Vietnam Railway which generally followed the direction of Route One, and saw occasional trains moving. But even in those days the Viet Cong were in the habit of blowing up the tracks and derailing the trains, and they had already started the practice of timing their assaults so that the passengers could be herded together for a lecture on the promises of a Communist revolution. Then the helpless passengers would be requested at gunpoint to make contributions to the war chest of the Viet Cong.

We reached Hue with a faltering and limping jeep. We were able to cross the Perfume River south of the city only by loading the car onto a freight train to be carried across the railroad bridge to this third-largest city of South Vietnam. Here the Viet Cong were noticeably strong, and we saw numerous protest rallies, boldly demonstrating against the government of Ngo Dinh Diem and the "Imperialist Intervention" of the Americans.

While we were there, a mob of students in this intellectual capital of South Vietnam stoned, wrecked and set fire to the USIS library in Hue. Their temper of hostility contrasted dramatically with their much-friendlier attitude towards the United States eleven years later, in 1968. Then, in the Communist Tet and Mini-Tet Offensives, the Viet Cong and North Vietnamese armies at last had their chance to come and take over the government of Hue for a month. After this experience, and the slaughter of 4,000 residents of Hue as disciplinary examples in a terror campaign, and after the heavy levies of young men and taxes conducted by the Viet Cong and the NVA, the people on the streets of Hue were inclined to be much more friendly towards Americans.

After we had reached Hue in this early 1957 hegira, we were con-

vinced that the echelons of the Viet Cong were active in organizing the revolution against Ngo Dinh Diem all through the nation.

At any rate, after that long trip over roads laid waste by World War II, our valiant green and white jeep station wagon gave up the ghost. That was the usual fate of vehicles attempting to drive any considerable distance along the highways of Vietnam in those days.

* * * * *

America's awareness of the growing war in Vietnam was slow to grow. The harbinger which many intelligence agents watch closely for an indication of impending large military plans—building activities—gave no hint of what was to come. Our construction budgets were small for the sprawling Southeast Asia area.

* * * * *

Helping with the planning of the early construction work in Vietnam was the already familiar Bangkok-based architect-engineer group of Tippetts-Abbott-McCarthy-Stratton Pacific Corporation (TAMS). In July of 1956, a change in the TAMS contract provided for assignment of engineers to RVN. First, four engineers were provided for the Vietnam MAAG. Then, four more were supplied. Under their contract, the TAMS organization was officially tasked with a long-winded requirement: "the preparation of engineering studies, construction program planning, cost estimating, developing courses for and instructing military and civilian personnel of the Vietnamese Armed Forces in engineering subjects, analyzing and making recommendations on the Armee Royale Vietnam methods of contracting and providing field engineering assistance and construction supervision and inspection as required." The name Armee Royale Vietnam, a hangover from the days of French nomen-

clature, was rapidly changed to English: Army of Republic of Vietnam, ARVN.

In March of 1957, the Bangkok OICC began supplying engineering and building support to Laos. That land-locked, poor and mountainous small nation was already sorely beset by the machinations of a well-trained Communist Vanguard. The Communists, the Pathet Lao, had managed a forcible welding of revolutionary-oriented Communist troop units into the Royal Laotian Army.

The U.S. engineering and building aid went to the Program Expediting Office (PEO) in Laos. This was a U.S. civilian organization like USOM.

The services provided to the PEO in Laos were somewhat similar to those provided by the OICC for the MAAG in Vietnam, and the JUSMAG (Joint U.S. Military Assistance Group) in Thailand (though much smaller).

The services included the planning and contracting for Laotian military camps, supply depots, training camps and hospitals, as authorized by the Direct Forces Support Program (DFSP).

Again, the first U.S. military engineers on the Laos scene were the Seabees. They were a Seabee detachment, the Zorro Team, which arrived in 1959.

The first part of the Team was deployed into Laos under Warrant Officer Herman W. Filbry. The group had the mission of exploring the upper reaches of the Mekong to check for sites for possible barge and river supply bases if future military operations should involve this area.

The Zorro work included grading and rehabilitation of the Wattay airstrip, and roads on the outskirts of Vientiane, the largest city and administrative capital.

Another part of the original 60-man Zorro team was called Zorro II. Zorro II was slightly smaller and it was deployed in Thailand, on a secret job. Like Zorro I, it was made up of Seabees from NMCB–9, NMCB–10 and NMCB–11. Like Z–I, Z–II was not a regular Seabee unit, but a special group made up especially for the mission.

As the operations of OICC Thailand continued to expand into Vietnam, Cambodia and Laos, it was decided to change the name to OICC Southeast Asia to more accurately reflect the range of responsibilities. This was done on 15 May 1958.

Starting in 1959, with local contractors, OICC SEA began a large

update of the Wattay field, in Laos. It was given a new concrete runway, taxiways and parking aprons, and new lighting and drainage systems, at a cost of $2.7 million.

Also included in this 1959 building effort for Laos was a housing project for PEO and USOM employees four miles out of Vientiane.

Ironically, the first plane to land at that shiny new airfield was a Russian transport, a Russian copy of the American DC-3.

In the summer of 1960, the OICC assigned a Navy Civil Engineer Corps officer, LT John P. Sylva, to Vientiane as ROICC (Resident Officer in Charge of Construction).

He arrived after the August coup where a right wing group, reacting against the Communists and other political shades, seized Vientiane. Fighting went on in Laos until 1962, when a Geneva agreement of concerned parties established Prince Souvanna Phouma as prime minister. The ROICC, LT Sylva later recalled: "The Pathet Lao gave us trouble. Several times I had to evacuate people from where they were working."

That same Geneva Agreement of July 1962 provided that all foreign forces be withdrawn, and the U.S. agreed to follow the dictates of the Geneva Commission on this subject. But the North Vietnamese troops, in the eastern regions of Laos, did not withdraw. The Laotian Communists continued to work with them to overthrow the government and set up a Communist dictatorship.

Another construction project finished in these early days (1963) under the OICC's direction was a modernization of the vital 11-mile road from Vientiane to Tha Deua. Tha Deua was Vientiane's most convenient ferry landing for Mekong River trade with Thailand. The job was to rebuild and put an asphalt paving on the road, at a cost of $1.4 million.

On the lighter side, the now Commander Sylva recalled being introduced—in the summer of 1961—to Prime Minister Prince Bon Oum by an Army Advisor as "the Commander-in-Chief of the U.S. Navy in Laos." At that point, the Prime Minister "bumped" a Laotian Colonel and added LT Sylva to his official party for a two-day tour of the southern Provinces.

In Cambodia in these early days the Bangkok OICC office arranged "Engineering Services to the Military Assistance Advisory Group" through contract with TAMS. Later, Thomas B. Bourne was awarded a contract for similar work.

In 1963, however, the self-styled Cambodian Head of State and

Premier (and former King) Sihanouk moved suddenly to force out the U.S. MAAG (which Sihanouk originally had requested). He had been moving toward a more pro-China, pro-Communist position which he described as "Neutralist". The U.S. obligingly withdrew all aid. That, of course, affected the U.S. MAAG and all construction. All this changed again in 1970 when Sihanouk's Premier Lon Nol led a revolt against him and moved to eject Sihanouk and the North Vietnamese armies which by then had almost submerged the country. Of this, more later.

In November, South Vietnam complained that NVA, regular army forces from North Vietnam, had attacked their garrisons in the Kontum-Pleiku area.

At that time, in the Bangkok office of the OICC, BG Alden K. Sibley, Deputy Chief of MAAG for Logistics in Vietnam, conferred with the OICC about MAAG's support of a building program to construct new fields, and improve others in Vietnam. A preliminary agreement, labelled "Airfield Construction Implementation Conference, Saigon, Vietnam, 6 December 1960", was prepared by the Bangkok office after that conference.

This document was the first definition of the mechanism for carrying out a civilian contractor building operation in Vietnam under the Bangkok OICC. It would provide for design contracts, with contract administration and administrative support from the OICC office in Bangkok.

This Saigon office would be a ROICC, Resident Officer In Charge of Construction.

The Sibley paper provided for screening, classification, security investigations, and selection of Vietnamese employees for the ROICC. The U.S. Embassy in Saigon would provide these services, and leave the final selection of personnel to the ROICC.

Logistic support would be provided for the ROICC by the Vietnam MAAG. Included would be vehicles for official use, also medical care, commissary and exchange privileges, and mail and message services for the U.S. personnel involved. The U.S. Navy personnel were to receive their financial support through the disbursing office in San Francisco, and the service records of the Navy personnel were to be cared for by the Navy Division of MAAG.

In February of 1961, the new ROICC office was opened at 213 Tu Do Street in downtown Saigon. The first ROICC was LTJG Edwin W. McLaughlin.

The ROICC office was near the center of the downtown shopping area, around the corner from the French administrative building, which had been taken over by the Vietnamese as their *mairie*, or city hall. Tu Do, meaning "Liberty", was the new Vietnamese name (since 1954) for the principal shopping street of Saigon, Rue Catinat. Catinat was famed for fashionable shops, sidewalk cafes, and former taxi-dance bistros. It now became Duong Tu Do, usually pronounced "Tu *Yo*" in Saigon but more properly, with the preferred northern or Tonkinese accent, "Tu *Zo*."

The building at 213 Tu Do boasted an effete hairdresser shop for men on the first floor, and a bookstore next to it. Inside, the concrete, stone and steel building was filled with moderate-sized private apartments. The ROICC office was a relatively large apartment one flight up from the ground.

The firm of Thomas B. Bourne Associates was chosen for the first large-scale design contract to be administered by the Navy in Vietnam.

This contract, NBy–32717, was awarded May 25, 1961. It was for $249,374 for the design of the first permanent airfield in Vietnam that would be "jet capable".

It was to be built for the Vietnamese Air Force. The location was Bien Hoa, 20 miles northwest of Saigon, site of a small and worn Japanese airfield with pierced steel planking (PSP) surface. It had been built by the Japanese during their World War II occupation.

One month later, a further contract, NBy–34988, was awarded to Bourne Associates for airfield pavement evaluation at seven airfields: Da Nang, Nha Trang, Vung Tau, Da Lat, Tuy Hoa, Ban Me Thuot and Phu Bai airfield at Hue. Most of the airfields had asphaltic concrete surfacing but a few had taxiways or parking aprons surfaced with laterite (earth with ferrous particles), or PSP. The principal concentration of interest was on Da Nang, Nha Trang and Hue. Clearly, the Vietnam MAAG was planning an improvement program for Vietnamese air-bases as the Number One priority item.

Also awarded were design contracts for the air-fields at Tan Son Nhut (Saigon) and Da Nang. They were for a PSP parking apron for military planes at Tan Son Nhut, with a design cost of $133,510, and an extension of the old French-built runway at Da Nang, with new parking aprons and taxiways, for $156,860. Both contracts went to Bourne Associates.

In July of 1961, the ROICC in Saigon asked the USOM office for

an evaluation of the contractors who had done some of the building in South Vietnam, with a view to using them for military construction. Those USOM contractors were Johnson, Drake and Piper and E. V. Lane Company. J, D and P had done the road building and E. V. Lane was then finishing a contract for concrete paving of the runway and taxiway at Saigon Airport (Tan Son Nhut).

The new President, John F. Kennedy, was moving decisively in the Southeast Asia crisis. His inauguration was January 20th, 1961. His first Vietnam steps were small. The direction was to help the ARVN to do their own fighting with Special Force "Green Beret" teams to train and organize the country people into military forces. He directed an increase in the number of regular military advisers with the ARVN, VNAF, and the South Vietnamese Navy and Marines. At first, he kept the number of advisers to the number of 685.

The President was vitally interested in a firm U.S. position in Asia. In June, he called back from retirement General Maxwell D. Taylor, a distinguished Airborne Commander in World War II, to be his chief military adviser.

General Taylor was a strong advocate of airborne power, and of the new Special Forces "Green Beret" troops. He also favored, as the President did, the use of helicopters in the "unconventional" war of the Viet Cong and North Vietnamese forces.

In October of 1961, President Kennedy sent General Taylor to Vietnam on a special investigative mission. As a result of the Taylor mission, there was a great change and increase in the U.S. military aid to the Republic of Vietnam, and, of course, a concomitant enlargement in military building. In early 1962, the President was to send Army and Marine helicopters to Vietnam in a radical step in anti-guerrilla tactics.

With the helicopter deployments went much building to make the first helicopter assignments feasible. In the north at Da Nang, at Saigon's Tan Son Nhut airfield, and south at Soc Trang deep in the Mekong Delta.

And airfields for conventional military planes were also a prime, even a desperate, necessity for South Vietnam in the face of continual ambushes by the enemy, and the need for quick air support for beleaguered ARVN troops units. The first groups of VNAF pilots were back from training in U.S. Air Force bases in the States, and T–28 trainers were en route by freighter. These spunky little planes,

called "Harvard" trainers, were handy for dive-bombing and strafing.

Early in 1962, (January), the first C–123 Fairchild "Provider" cargo planes, with U.S. Air Force crews, came in to help move military cargo. Rail transport, because of many VC (Viet Cong) demolitions, was almost non-existant. And road transport was growing very undependable with increasing VC–NVA ambush activity. Therefore, the first U.S. airfreight squadrons were overwhelmed with work.

On December 8th, 1961, a U.S. State Department White Paper had said that South Vietnam was menaced by a "clear and present danger" of Communist revolution; and on January 4th of 1962, a joint U.S.-Vietnam communique announced that "measures to strengthen South Vietnam's defense in the military field were being taken."

In accordance with this promise, greatly increased forces of military advisers, reaching deeper into Vietnamese army levels, and two companies of technicians to care for aircraft, were assigned. The U.S. military in South Vietnam had far surpassed the figure of 685 advisers, and was rising beyond the figure of 4,000 at the end of January 1962.

This was a five-fold increase since the end of 1960, when less than 685 advisers were on hand. It seemed evident now that to provide for the increased American military aid, considerable construction activity would have to be undertaken.

CHAPTER THREE

The First Construction Gets Started

Napoleon once wrote that an Army marches on its belly. But the modern variety could be more aptly described as advancing on tracks laid down by its supply train. Even the kind of adviser-technician-and-Special-Forces Army John F. Kennedy chose to assist the South Vietnamese in their struggle against the "unconventional" guerrilla forces of the Viet Cong and their North Vietnamese supply train required back-and-budget-breaking building exertions.

In the closing months of 1961, the Saigon ROICC, LT McLaughlin, sought to clear the way for the arrival of construction equipment and material. As of this time, only one contractor employed by the ROICC, Thomas B. Bourne Associates, was entitled to duty and tax-free importation privileges. As a result, in October, LT COL Vinh of the VNAF, or Vietnamese Air Force, signed a vital memorandum for the record. It provided that all construction equipment brought into Vietnam for approved projects and owned by the U.S. government or its contractors could be exported free of obligation when the work was completed and the contract terminated.

Another request from the ROICC was granted in the form of an amendment to the MAAG agreement, specifying that MAAG would provide reproduction service for the ROICC for drawings, specifications and documents.

With these new preparations established, a group of new design contracts was awarded. One contract for AC & W (Air Control and Warning) stations at Da Nang and Tan Son Nhut was signed on October 7th, 1961 with Tudor Engineering Company and Pacific Architects and Engineers, Inc. (TEC-PAE), a joint venture for $279,955 (NBy 41519). But the significant item was that it was typical of the construction required in this modern kind of war.

Radar, computers, the thousand electronic gadgets that go with aerial defense demand new facilities and special features like air-conditioning, extra transportation and special handling too.

The contracts with both Thomas Bourne Associates and TAMS were extended with the proviso that the contracts could be further extended if new funds were to become available.

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To BUDOCKS Chief, RADM E. J. Peltier, a growing workload trend was clear. The requirement for engineering support of the MAAG was not to be short lived and in his judgment the first major construction projects to be funded were the beginning of something bigger—not yet defined. After consultations with RADM H. G. Clark, the BUDOCKS Pacific Division Director and the knowledgeable planners in the Pentagon, he decided to select a joint venture from among the most experienced construction firms in the United States for the initial work so that a base capable of rapid expansion would exist if his judgment were to be true—as it was.

In Washington at the low, rambling "temporary" buildings which housed the Bureau of Yards and Docks, right next to Arlington Cemetery on the Virginia side of the Potomac, big changes were happening. RADM Peltier was retiring as Chief in January 1962, and his deputy, RADM Peter Corradi, moved up to take his place.

There were some 936 engineers and technicians—civil servants and naval officers—working at this center for the world building operations of the Navy. Of these, 868 were civilians and about 68 were officers of the Civil Engineer Corps.

By this time, BUDOCKS had decided to center the construction work in Vietnam upon a large consortium composed of Raymond International, a large New York contractor with wide experience in the building of dams, ports, highways and roads, and Morrison-Knudsen, headquartered at Boise, Idaho. Morrison-Knudsen was one of the largest of the nation's building firms, with a large practice in such heavy construction projects of great size as the Feather River Dam.

The choice of RMK had followed a thorough process of selection. It had started with lengthy interviews by a BUDOCKS board at its West Coast headquarters in San Bruno, in November of 1961.

The board interviewed representatives of five combines or joint ventures: J. A. Jones, Perine Corporation and J. F. White; the Vinnell Corporation; Johnson, Drake and Piper; Raymond International and Morrison–Knudsen; J. H. Pomeroy and Company—Hawaiian Dredging and Construction, Ltd.—Haas and Haynie.

The BUDOCKS board unanimously chose Raymond, Morrison-Knudsen. The component companies had long and distinguished heavy construction records and were ready to proceed with the Vietnam work.

Raymond International was started in 1897 as the Raymond Concrete Pile Company. The original Raymond was a pile-driver specialist, in Nebraska. In 1908, the company drove piles for the city of Vera Cruz, Mexico. In 1923, the same in Tokyo. In the nineteen twenties and thirties, they built roads, highways, ports, and railroads, all over the world. Just before World War II struck the U.S., they drove the piles for the Pentagon. In the same period, the company participated in a joint-venture (Contractors, Pacific Naval Air Bases) to build Navy bases all over the Pacific. This tremendous contracting job ran to a cost of $1.5 billion. It included Naval bases and air stations at Pearl Harbor, Midway, Wake, Guam and the Philippines.

In the post-war world, Raymond was the general contractor for the city dam and power stations for Brazil's new capital city of Brasilia. Similarly, vast heavy construction works were completed in Liberia, Ecuador and Venezuela. In Guayaquil, Ecuador, an entire new port facility. In San Tome, Venezuela, a new community of 6,000 houses, including public works facilities and streets.

Morrison-Knudsen began in 1912, in Boise, Idaho, when two local constructors got together. Since then, besides the above-mentioned Feather River work, they did jobs in 57 foreign countries, as well as in every one of the United States.

The firm was also one of the eight Pacific Naval Air Bases contractors. One of their great works was the world's largest underground fuel storage facility at Red Hill, Pearl Harbor. Their work included the same range of naval base facilities as Raymond. And most recently, Morrison-Knudsen had constructed more than half of the Minuteman missile underground launching silos.

On December 8, 1961, a letter contract was awarded to RMK through the BUDOCKS Pacific Division. It specified the construction of the Air Control and Warning stations at Saigon's Tan Son Nhut and Da Nang airfields, the military parking ramp at Tan Son Nhut and improvements to the Bien Hoa airfield.

Within a month, a still higher-priority item had emerged—the construction of an airfield at Pleiku, in the central highland country along the Laos border. The Viet Cong had been increasingly active here at the end of one of the North Vietnam supply lines through Laos (later called the "Ho Chi Minh Trail").

The MAAG in Saigon labelled the Pleiku airfield a "Number One Priority", and requested that an all-out effort be made to make this airfield operational by July 1st, 1962. Even the design had not been started.

The requirement was given to BUDOCKS in January, and the RMK letter contract was amended on January 19th to include the construction at Pleiku. Bourne Associates was awarded the design work on January 24th.

By January, it had become apparent that, with the expansion of military aid to South Vietnam, construction funded by the MAP (Military Assistance Program) would amount to as much as $100 million in the next two or three years.

At the time of the selection of RMK to accomplish the earliest assistance program work in Vietnam, it had been RADM Corradi's intention that the work be accomplished through the medium of a fixed price contract. Although the plans and specifications which describe to the contractor exactly what was to be built were not yet complete, it was intended that a fixed price would be negotiated at an early date, shortly after the design was available. The letter contract was a preliminary contractual document which permitted RMK to mobilize and guaranteed reimbursement of the mobilization costs if anything should happen to prevent the execution of the work. The fixed price contract is the normal approach for Navy construction. It promotes efficiency by the contractor since any profit is dependent upon his own operations. It is also relatively simple to administer. The OICC in this case would be responsible to assure that the contractor built what was required in accordance with the plans and specifications in the time specified in the contract. But such a contract is dependent on complete design based

upon site surveys and engineering studies and also presumes that the contractor will be free to operate without unreasonable constraints. These conditions did exist in late 1961, but they were deteriorating. As the additional work was added to the contract with an urgency for early completion, it became clear that time could be saved if the contractor was permitted to get started before the final designs were complete. Further, the military situation was growing worse—this was the origin of the increased requirements. And the new work was to be accomplished at remote sites. The contractor was now faced with the many problems of operating in a near wartime situation with a significant degree of uncertainty about his freedom of action in many areas. The availability of the labor force was not certain and the possibility of enemy attack was more serious than had been thought several months earlier.

Under these conditions, when the second increment of work was added to RMK, RADM Corradi decided that the total work of the contract could be best accomplished under a Cost Plus a Fixed Fee contract. A brief description of a CPFF contract will be included at this point to avoid the possibility of a misunderstanding of this type of contractual instrument.

Under a CPFF contract the contractor is directed to construct specific projects and is reimbursed for the costs associated with the work. Work may proceed rapidly with less comprehensive design and preliminary engineering studies since the Government assumes any risk of changed conditions. The contractor's profit is not dependent on his efficiency in finishing the work within a fixed price. His profit, in this case known as his fee, is determined in a different way. At the time of the award of a CPFF contract, a fixed fee percentage is agreed upon. Such a percentage is dependent on the size of the construction project and its complexity. For a very large project the fee percentage will be relatively low. The actual fee to be paid is determined by applying this percentage to an agreed upon estimate of the cost of the project to be built. The principle involved is that the OICC and the contractor would negotiate the estimated cost to determine the actual fee before the contractor would start any work. This avoids the cost plus percentage of cost type of contract, now illegal, whereby a contractor could increase his profit by operating inefficiently and increasing costs.

In practice in the RMK contract, every time a new job was added,

a change to the original contract was made and it was necessary to to negotiate the estimated cost of the work as early as possible for fee purposes.

We will see at a later point how this contract was changed to adjust the fee when the program grew to its enormous scope and also how it was modified to a Cost Plus Award Fee (CPAF) contract to add a degree of incentive to the contractor to operate at a high level of effectiveness.

The estimated cost of the construction under the contract at the time it was converted to CPFF was $15,355,355, including a fixed fee of $645,855. On top of this, $3 million worth of equipment and $2.5 million worth of materials was to be provided by the government, and $1,319,000 was allowed for transportation to and within Vietnam.

That brought the total to $22,174,355. The biggest building amounts in the contract were $8 million for the Bien Hoa airbase; $4 million for Da Nang, and $2.7 million for Pleiku. The amount for Saigon's Tan Son Nhut was much less: $173,000.

The work involved rehabilitation and improvement of airfields, which were the Number One priority project. At Tan Son Nhut, the first job was to build two pierced steel plank (PSP) aprons and to repair and sand-seal an existing asphalt apron. Three taxiways leading from the concrete parallel taxiway just finished by E. V. Lane (a USOM contractor) to the two PSP aprons were also to be constructed. The work on the taxiways was to put down 5,800 square yards of crushed rock, finished with a double bituminous surface.

At Bien Hoa, the PSP runway and parking aprons were to be replaced with a new concrete runway, taxiway and parking apron. A storage facility for oil products, or POL (Petrol, Oil and Lubricants) and an ammunition dump were to be built.

At Pleiku along the Cambodian border 200 miles north of Saigon, a new airfield with a 6,000 foot PSP runway and parallel taxiway with access taxiways and parking aprons, and a perimeter road and fencing were to be built. The existing buildings were to be "rehabbed."

At Da Nang, the former French naval base at Tourane, 380 miles north of Saigon, the major work on the airfield did not start until

1963. In 1962, only minor work was done on the field, with a cost of about $150,000.

But the work for the much-wanted AC and W radar station site in East Da Nang began. The complex included six buildings at Monkey Mountain, a 2,000 foot peak at the north end of the peninsula across the Da Nang River. Also included were to be buildings at the bottom of Monkey Mountain and a four mile road through the mountainous jungle between the two locations. The estimated cost of this rapidly grew to $2.7 million.

At this time, a higher-ranking boss arrived at the office of the Saigon ROICC. He was CAPT William R. Boyer.

CAPT Boyer carried with him the new title, DOICC SEA, or Deputy Officer in Charge of Construction, Southeast Asia.

Down in Saigon, at the Tu Do office of the ROICC, LT McLaughlin, the former ROICC, became Assistant Deputy Officer in Charge of Construction (ADOICC) under CAPT Boyer.

On February 10th 1962, the DOICC office had a staff of 19 people: three Navy officers, four U.S. civilians and four TCNs (Third Country Nationals, meaning in this case Filipinos), and eight Vietnamese. At that time, there was a change in the overall command in Saigon. On February 8th 1962, the Military Assistance Command, Vietnam (MACV) was born, with General Paul D. Harkins commanding.

In March, the offices of the Deputy Officer in Charge of Construction were moved from 213 Tu Do to a larger headquarters at 176 Hai Ba Trung.

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At first, the DOICC installation occupied only two floors. By June 30, the total number attached to the headquarters had nearly tripled to 56. At that, the workload was extremely heavy, and all personnel were working at least nine hours a day on a six-day week, some working as many as 14 to 18 hours a day.

U.S. military assistance then leaned heavily on close military ad-

visers, technical assistance and the necessary building program to go with these things. The new kind of Army troopers, the Special Forces, were particularly well suited to their role and a dozen "A-Teams", 12-men strong, were trained and deployed with the objective of training the country people of Vietnam to resist the Viet Cong.

One of the first moves recommended to the South Vietnamese was an expansion of the ARVN (Army of Viet Nam) to 200,000 with similar increases in the National Guard-type troops. The Special Forces A-Teams were invaluable in training these troops.

The very similar Seabee Teams which had already seen prominent service as high-powered builders of American goodwill in many nations of the world were also destined to play a major role as the U.S. commitment grew.

Since builders always had to go first in the modern kind of war—even the irregular kind—the Seabee teams were active immediately in building frontier camps for the Special Forces, the Montagnards and the Civil Guard.

CHAPTER FOUR

The Mini Boom in Building

As the organization of the OICC Southeast Asia and the Saigon Deputy OICC evolved, the first "little boom" in building was beginning for the contractor. At least, in retrospect it seems to have been only a little boom compared to what happened later. But in 1962 it certainly was a boom, with no qualifying adjective.

Procedures were being worked out and organizational mechanisms developed for working with the contractor consortium, and with the smaller Lump Sum contractors who were also being employed by the DOICC in Saigon. There were more than 30 such Lump Sum contracts awarded for small construction projects throughout the Republic of Vietnam. There was such a rush with these projects that the design work was not laid on in Bangkok, but done in Saigon directly. But of course, the total of the Lump Sum value was small compared to RMK.

At this time virtually all of the design work for the RMK projects was accomplished in Bangkok since the large architect-engineer firms maintained their offices there. There was not yet sufficient design work to make it economical for the establishment of offices in Saigon. This would, however, happen as the program in Vietnam grew.

By the end of 1962, the administrative staff of the DOICC in Saigon had grown to 84, but was still understrength for the work to be done, and a justification paper had been put together requesting a further expansion.

The DOICC was also having difficulty recruiting people for the staff, particularly engineers of the GS–11, –12 and –13 levels. Transportation, housing and living allowances were also problems.

And as 1962 wore into 1963, the number of Viet Cong raids on ARVN positions, assassinations and other terrorist activities in-

creased manifold. By January 1963, the Viet Cong seemed to feel they were strong enough to risk battalion strength involvements, as in the Battle of Ap Bac that month in the Delta. Seven months before that, on June 2nd, 1962, the Canadian and Indian members of the International Control Commission alleged that North Vietnam was guilty of subversion and covert aggression against South Vietnam, with hundreds of episodes making the point. The Polish delegation in the three-nation commission, however, rejected the charges, as might have been expected from a country on the Communist side of the iron curtain.

In 1962, the Raymond–Morrison–Knudsen contracting combination charged ahead with their pioneer work of building airfield facilities. As the year 1962 ended, their work force in Vietnam was 140 Americans and Third Country Nationals, and 2,900 Vietnamese. The value of the work placed during that year was about $15 million. The largest jobs had been the updating of airfields at Tan Son Nhut (Saigon), Bien Hoa, and Pleiku. Most important, the Pleiku airfield was completed in July, and military aircraft had begun using it July 27th.

At Bien Hoa, where the biggest new airfield was taking shape, the construction workers had been beset by a problem which was to plague them in many new sites: The planned construction impinged on a graveyard, and the complicated business of negotiating with the families of the interred people and transferring the bodies to a satisfactory new location was worked out. By year's end, there were still some 60 of the 360 graves at the Bien Hoa airfield site remaining in position.

At all of the airfield sites, the first buildings to be erected were offices and dormitory quarters where supervisory personnel could live. With a roof over their heads, the supervisors tackled the other jobs post-haste. RMK was already used to operating with minimal facilities.

In these early Vietnam days, housing for the builders on any site was a problem. In the larger cities, the builders could usually find local rooms, but in the "boonies", the frontier towns, there was usually no housing, or available office space. Eating facilities were minimal—with contaminated drinking water and food supplies frequently grown with human fertilizer, therefore loaded with dysentery viri. Dysentery, both the milder bacillary kind and the severe

amoebic sort, was a constant menace to say nothing of the Viet Cong.

This was one large reason the Vietnamese work crews didn't like to move from their home localities to another far-off job site. They tended to grow sick working in a strange locale. They had grown inured to their local infectious organisms and when they moved to a new set they often got sick. Each locality had its own varieties of "bugs" and it was hard on a stranger's constitution and his accumulated antibodies to move. It was especially hard on Americans who had to travel within the country.

So the RMK people started doing their own cooking, having their own commissaries—as the American advisers often did. At first, the RMK people built mess, administrative and living spaces, later to be turned over to the Vietnamese. Subsequently the builders lived in trailers, and moved their camps when they had to move to other sites.

At the Saigon office of the combine, transportation and communication were difficult problems. Early that year, a cable sent from Saigon via military channels on February 7th arrived at San Francisco on the 15th. It was decided to use commercial facilities in the future, but they too proved to be slow.

The first project manager for RMK, arriving in January 1962, had been Warren N. Riker of Raymond International. He was replaced on May 21st by W. W. (Bill) Hung of the Morrison-Knudsen Company, which in effect changed the sponsorship of the joint venture. Until then, the principal responsibility for the contract had been with Raymond International. And with this change, Morrison-Knudsen became principally responsible. The change was noted in a contract amendment, stating that the senior partner had become Morrison-Knudsen.

The main office of RMK was opened at 2 Duy Tan, just north of the large, sandstone Notre Dame cathedral at the center of Saigon. The Duy Tan building had been an automobile dealership, and it was remodelled into various offices. The second story row of executive offices with mahagony doors was maintained through the war with the accurate nickname "Mahagony Row", and the consortium main office continued to be in this centrally located building.

During the Tet Offensives of 1968, when the Viet Cong and NVA forces fired rocket barrages into this central part of Saigon from

improvised launching sites on the south bank of the Saigon River, rocket projectiles rained up and down the length of Tu Do, and came very close to 2 Duy Tan and then struck the City Hall parking lot, the first ROICC headquarters at 213 Tu Do, and the park across the street, some government dormitories farther up the street towards the Notre Dame cathedral, and the upper reaches of Rue Pasteur beyond the consortium headquarters, but there were no direct hits on the RMK head office.

In these early days the same problems plagued the consortium which continued to badger them as the scope of their work zoomed and swelled to the colossal body of activity which is one of the main subjects of this book. Besides difficulties with communications, and such simple matters in the United States as procuring telephones (it was practically a United Nations case to have a telephone installed in Saigon in those days), there were great difficulties in procuring equipment and supplies, and having them transported the endlessly long route across the Pacific to this small rice-growing country with only one deep water port, Saigon.

Early in 1962 (January) the Navy Resident Officer In Charge of Construction (Pacific) at San Bruno, California, a southern suburb of San Francisco, received two lists of construction equipment from DOICC Saigon to be drawn from Navy P.W.R.S. (Prepositioned War Reserve Stocks). These were chiefly at the Construction Battalion Center, Port Hueneme, California, the largest Navy repository of such items as bulldozers, scrapers, pans, sheepsfoot rollers, etc. This equipment was needed for the RMK combine in Vietnam.

The ROICC at San Bruno operated under the command of the BUDOCKS Pacific Division to support the several Navy OICCs in the Pacific area in a variety of ways including procurement, engineering and expediting. This operation was to become so important that RMK also set up a counterpart office in Navy buildings at San Bruno.

The lists were somewhat garbled in transmission from Saigon, but the ROICC PAC busied himself with arrangements to procure these items from Navy stock. The Navy stocks of equipment—vast storage areas of it at Port Hueneme and the similar base at Davisville, Rhode Island—were almost instantly available for use by the contractor, though a good deal of it was old and well on the way to being obsolete.

A letter of intent from DOICC Saigon had authorized $6 million for these items. Later, another $2 million was added. And in February, a tentative lumber order for 140,000 board feet was prepared in sizes ranging from 1 × 6 inches to 12 × 12 inches.

In March, five ships carrying construction materials and equipment for the job arrived in Saigon with a total of 240 pieces of construction equipment on board.

In March, construction had been started at Bien Hoa, Tan Son Nhut and Pleiku, and Pleiku, and the advance party to build the radar station at Da Nang had left Saigon on the 21st of March.

In a meeting at BUDOCKS in Washington, in July, 1962, most points of dispute in regard to the formal RMK contract NBy–44105 has been resolved.

In August, one hundred tons of supplies were ready at the Naval Supply Center, Oakland. They were to be shipped on the CHOCTAW and STEEL ADMIRAL due in Saigon on September 6th and 12th, respectively. Materials on nine purchase orders to be shipped by air were delivered to Travis Air Force Base for shipment by MATS (Military Air Transport Service).

In October, the Weekly Activities Report, which had begun as a three to four page summary was now running 15 to 20 pages. The work in place in October amounted to $1 million.

That same month, a question arose as to whether progress photos might be classified matter. To avoid any complications, the unprocessed film of such progress was turned over to the DOICC in Saigon.

To summarize the work accomplished by RMK in the different main sites, location by location, in 1962 and 1963:

At Tan Son Nhut, the original base had been built by the French Army in 1939. The runway had been built of laterite, a hard earth with a high iron oxide content, not unlike clay except for the high degree of iron particles. This original runway was improved in 1944, during the Japanese occupation, by Japanese labor troops, and further expanded when the French reoccupied the base in 1946. In 1955, the South Vietnamese took over control and maintenance of the field from the French. The first U.S. Air Force unit to be stationed at Tan Son Nhut was the Second Air Division, then composed mostly of helicopters and transport planes.

The initial job under NBy–44105 was to build two pierced steel

plank aprons and repair and sand-seal an existing asphalt apron. But by the end of February, 1962, no work had been started, because the MAAG did not have a coherent plan. But in mid-March, after discussions between the DOICC and MAAG, mobilization of men, equipment and materials started and the taxiway work began. Taxiway Number 3 was opened to traffic on April 16th, 1962. Taxiway Number 2 was finished April 21st and Taxiway Number 1 on May 3rd. Grading had also started on the two PSP aprons.

At Bien Hoa, building began early, on February 23rd on the contractor's camp and shops. The runway construction, where the PSP runway and parking aprons were to be replaced with a 10,000 foot concrete runway and a 10,000 foot concrete taxiway, was slower to get underway. The clearing of the property was finished by the end of March, but it was early noted that several hundred marked graves were a great handicap. A survey showed 360 graves.

The rainy monsoon, which occurred during what would be the summer months in our U.S. continental climate, was heavy. In the wet and mud, as the mid-year rains drummed down, these vexing problems continued to plague the building effort: The acquisition of permission to build on some of the land, negotiations on procedures for removing the graves, and the time-consuming checking of employees by the ARVN troops guarding the field site as the laborers reported for work.

Barely into the new year, on January 2nd, 1963, the first concrete pour was made on the runway. It had taken a full year to get the productive facilities in function and to overcome the legal and administrative problems. But as of January, 1963, the production machinery was functioning smoothly, and the airfield was dedicated in late June, 1963.

In Pleiku, next northern-most of the four initial jobs of RMK, the construction of an airfield with PSP runway and taxiway 6,000 feet long, and associated airport buildings such as a hangar and a control tower, did not begin until the end of March.

Plans for the airfield were received from DOICC in February, 1962. The initial building crew for the Pleiku project was about to board the plane at Tan Son Nhut on February 27th for the flight to Pleiku when news of a bombing of the presidential palace of Ngo Dinh Diem came through. The crew was pulled off the plane and ordered to take shelter.

The attempted overthrow of Ngo Dinh Diem proved to be abortive, but the flight to Pleiku was delayed until March 3rd.

That same day, a team of mechanics took off for Qui Nhon with the mission of reconditioning dozers, graders, and compactors which had been used by Johnson, Drake and Piper in rebuilding Route 19 from Pleiku to the coast at Qui Nhon in 1959–60. It had been turned over to the RVN Public Works Department by J, D and P and it was in need of urgent repair work.

The team of mechanics pitched in with spates of long days of work, including weekends. And following the RMK practice, there was no extra pay for overtime or weekend work. When a U.S. or Third Country National contract employee went to Vietnam, he knew he was expected to put in long days and a long week.

An urgent problem remained at Qui Nhon: To somehow manhandle the earth-moving equipment across the unsafe, Viet Cong-harrassed breadth of the country to Pleiku on the 3,000 foot plateau where the work was to be done. One of the practical master-construction-minds of RMK, who had come to Vietnam from equally difficult work on an Iranian building site, managed to locate a French man-of-all-work who guaranteed that he would deliver the convoy of earth-moving equipment to Pleiku safely by the overland route. Miraculously, and with no particular questions asked or answered for the record, the Frenchman delivered the column of equipment to Pleiku unharmed and undamaged, at the end of March.

Excavation for the runway began without delay, the first week in April. To overcome the shortage of rock, purchase orders were issued to local contractors for base rock and smaller, surfacing chips. And by the end of April, the excavation for the runway and the western over-run section had been completed.

The placing of rock as a base course for the runway began on May 27th, and the asphalt priming started shortly after that. Both operations were finished by mid-June. In the first week of June, RMK began to lay the PSP on the runway, and that was completed in an amazingly short time, by June 20th. The paving of both taxiways and the runway was also finished, and all this was just in time, for the annual rainy monsoon was beginning.

At Da Nang, fourth of the major RMK construction assignments in that year of 1962, the work took longest to get started. This of

course was partly the result of the fact that Da Nang was the northernmost of the sites, 380 miles north of Saigon.

On March 21st, 1962, the advance RMK party of four Americans and two Vietnamese landed at Da Nang Airfield. Their job: To search quarry sites, establish a camp, and conduct a preliminary survey of the job. They took civilian quarters in the city until the camp could be completed, and made preparations to hire workers and to receive the first load of building equipment.

The first quarry was located before the end of March at the foot of Monkey Mountain, which is the dominant geographical feature of the Tien Sha Peninsula on the seaward end of Da Nang, separated from the city by the outflow of the Da Nang River.

The first RMK camp was built near the foot of Monkey Mountain, next to the French-built Camp Tien Sha.

The initial work in the Da Nang vicinity was to build the radar station on Monkey Mountain, the road up to it, and 12 buildings at the bottom. This was rapidly expanded in July 1962, and eleven more buildings added to the program.

During 1962 plans were being completed for the work on the airfield, but as the year came to a close, and urgent operations were undertaken by Marine Helicopter Squadron Number 163 out of Da Nang, no building operations had yet been started.

As a resident author, this writer had been living with the Marines at the Da Nang base, and found the accommodations primitive but ample for that first Marine helicopter squadron deployment. The buildings, the barracks and shower rooms, messhalls and briefing rooms, had been put up by the local Vietnamese contractor. At that time, the taxiways and parking strips were paved with PSP, and the runway, while black-topped, was only 7,900 feet long, and much in need of reconditioning.

Another early deployment of Seabees in Vietnam was the assignment of Detachment Alpha of NMCB–9 to bring in an ample water supply for the Marines in the helicopter outfit at Da Nang Airfield. The Marine deployment was named "Shufly" and the Seabee mission took the same name. The job of the Seabees was to cope with a perennial water shortage.

In September of 1964, the 16-man Seabee detachment took off from Okinawa to correct the difficulty. The leader of the party was Navy Chief Equipment Operator R. W. Thomas.

With a long drilling effort, it developed that Chief Thomas' group had drilled the deepest successful well in South Vietnam. The well was 403 feet deep, and it had taken 41 days of work to reach that extent of penetration.

EO1 Arthur J. ("Pete") Welty, who was a specialist in well-drilling in his 17 years as a Seabee, had put down 13 wells before this "Shufly" project. He committed a pardonable pun when he summed up the operation as: "A bit-by-bit proposition all the way down", and he reported that six diamond-tipped drill bits were worn out by the resistant bedrock beneath the Da Nang Airbases. He called the job his toughest, and cited the solid marble bedrock encountered most of the way as the principal source of trouble, with the incessant rains of the northern winter monsoon close behind.

At Da Nang the job of clearing the runway extension and over-run areas began in June of 1963. The work force of Vietnamese was over a thousand, and there were more than 30 Americans and Third Country Nationals in the RMK organization. An office building, warehouse and shop were built and occupied in June, and a construction yard finished on the west side of the runway. There, a concrete batch plant arrived from Pleiku. It was in operation by the end of September.

An unusually heavy rainy monsoon began early, in September, and much of the work accomplished during the clear summer months was flooded out, and a good deal of redesign had to be done.

As the work in these major locations progressed, more projects were added to the contract. One of the early change orders was an improvement project for Soc Trang.

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Soc Trang is about 100 miles southwest of Saigon in the Mekong Delta area. It has a mean elevation of ten feet above sea level. The project involved an overlay of 18,000 cubic yards of base rock over the runway, and paving with a double bituminous surface. The two concrete parking aprons were to be repaired and the drainage of the swampy field was to be improved. The airfield was badly deteriorated.

On February 1st, 1963, an RMK engineer with an eight-man survey party left Saigon for Soc Trang. They were to live on the local economy. In the third week in March, a rock-crusher arrived by barge at a river port four miles from the site. At the same time, barge loads of rock ready for crushing also began to arrive. As March ended, the crusher was in operation and the runway had been closed so that the laying of the base course rock could be started.

The maximum work force at Soc Trang was employed in mid-April: six Americans and Third Country Nationals, and 160 Vietnamese. By the end of April, 10,000 cubic yards of rock had arrived from Bien Hoa. In June the southern rainy season began, with a rainfall of $3\frac{3}{10}$ inches in 24 hours.

The Army helicopter company, which had moved its operations elsewhere during the construction work, requested that the repaired runway be ready for operational use on June 21st. The date was met, the field was ready that day.

As plans were completed in Washington for the deployment of further American troops, RMK undertook refurbishing work in many port cities up and down the length of the Vietnam coast under the direction of a new DOICC, CAPT George T. Swiggum, who had relieved CAPT Boyer in February 1963.

At Vung Tau, the former Cap St. Jacques, the French vacation place 45 air miles southeast of Saigon, the PSP runway and taxiways were scheduled for refurbishing in early '63.

In Saigon, work was started on Saigon Wharf Number 1, which was to be reinforced with a sheet pile bulkhead. But the earth was structurally unstable and work was stopped in August of that year, and deferred until re-design of the port facility could be finished.

In the summer of 1963, RMK began work on a freight and passenger terminal building for the military flights from Tan Son Nhut. What happened with these two buildings at Tan Son Nhut was typical of the kind of scrambling that was going on in the search for living and operating quarters amongst American troops assigned to Vietnam.

On June 20th, RMK was told by DOICC that instead of being one building, which was to be a combination air freight and passenger terminal, two buildings would be erected, with a different orientation.

By September, the building sites were finalized, but the area was being used as a motor pool by the U.S. Army, and they refused to

leave. The DOICC appealed to MACV, the ultimate local authority, and the Army was notified that they were to be moved out by November 25th.

Farther north along the Vietnam coast, the great natural harbor of Cam Ranh (literally, Sweet Stream) was receiving some early attention in 1963. One of the great natural harbors of the world, Cam Ranh Bay is wide and deep and sheltered, and it was used on an expedient basis by the French Navy when they first visited the Vietnam area in 1847. But the French preferred to build ports at the two largest cities, Saigon and Da Nang. There were only a few fishing villages in the Cam Ranh vicinity.

In 1905, during the Russo-Japanese war, the Imperial Russian fleet used Cam Ranh as a harbor, and again, during World War II, it was extensively used by Japanese warships. The French had built harbor defense artillery emplacements to protect their approaches, and a few small military compounds.

As the building boom progressed in South Vietnam, new interest in Cam Ranh as a harbor grew. One of the champions of development of this huge bay was Admiral Harry D. Felt, the Commander in Chief, Pacific (CINCPAC), the overall military commander of the Pacific area, and Southeast Asia.

His proposal was to build at least one up-to-date pier for deep-water ships at Cam Ranh. But many top-level military men opposed the idea—even the proposal to build a pier only 400 feet long at this sandy and sparsely settled shoreline.

Admiral Felt stuck to his guns. He was convinced that this great bay might be an invaluable resource, even with our restrained efforts to help the RVN.

In the argument, the pier project was humorously referred to as "Felt's Folly." But the far-sighted Admiral had his way. And when the U.S. committed large conventional forces to the war in 1965 and 1966, the Army could use Cam Ranh at least six months earlier as a ready supply port—while other piers were being rushed to completion. Then four more, longer piers, were added.

The first RMK personnel came to Cam Ranh Bay on May 2nd, 1963. They set up offices and quarters in the former French military barracks near the pier site. Within a week, they had found a quarry site 1½ miles southeast of the job site. Of course, there was plenty of sand for concrete.

The causeway construction was started on July 12th, and a month

later, a pile-driving barge arrived at the site. The first bearing pile for the pier was driven 15 days later, on August 27th. The concrete panels, precast in sections, were begun on October 1st.

The terrain around Cam Ranh Bay is a wide expanse of sand. As October wore on, it became apparent that the penetration of the bearing piles of the pier was turning out to be a lot greater than estimated. Since the supply of bearing piles was severely limited, and there was a long delay expected in resupply, it was decided to reduce the number of bearing piles by cutting back from 47 to 32 "bents". Furthermore, the skilled construction men of RMK trundled out an old trick to increase the strength of the structure: They lagged or retarded the flanges. About a third of the 33,000 feet of the piles were modified in this way to increase the bearing and surface friction areas.

The pier was nearly finished the first week in April, 1964, and the concrete decking was completed on April 15th. It was June before the causeway, the pierfender system, the water system, and the powerhouse, POL tanks and paving had been completed. The pier project at a cost of about $1.6 million, was turned over to the DOICC by RMK on July 23rd, 1964.

One other early project of RMK in 1963 was refurbishing the airfield runway and parking aprons at Nha Trang, ten air miles north of Cam Ranh.

Nha Trang was long a favorite seashore resort of the French, with its wide boulevards and rows of luxurious stucco villas overlooking the long strip of beautiful bathing beach. It had been chosen by the Vietnamese Army as the site for their school for Rangers, and the Vietnamese Navy and Air Force had established training centers here.

The U.S. Special Forces, the legendary Green Berets, also chose Nha Trang as a training center and administrative headquarters.

The first projects assigned to RMK in Nha Trang were patching and sealing the east-west runway and two of the parking aprons on the airfield; the other job was to construct 35 buildings for the VNAF Academy with the necessary sewer, water and electrical systems.

The building force consisted of 16 Americans and 30 Vietnamese. No camp was constructed in this case because of the extensive housing in this resort city. The Americans all lived on the local economy.

The construction work in the Delta area had begun with the job at the Soc Trang helicopter airfield, in February, 1963. Now bigger projects were stirring. On September 23rd, an RMK party arrived at Can Tho, including an RMK survey crew and interpreters, in two pick-up trucks.

Can Tho, the largest city in the Delta, is 100 miles southwest of Saigon. It is located on the south bank of the Bassac River, the southernmost of the Vietnamese outfalls of the mighty Mekong, which dominates the agriculture of this whole area.

The Delta area, the rice bowl of Vietnam, was thoroughly infiltrated with Viet Cong forces, and the only Americans in the vicinity were advisers from the U.S. Army and Air Force, stationed with the Vietnamese infantry divisions and VNAF units. The RMK personnel were warned that it was unsafe to go any distance from the roads in the area. And the headquarters of the Vietnamese Army, (ARVN) told the RMK people that no security could be furnished before September 30th. It was a nervous time at Can Tho, a normal situation.

The RMK group stayed in the principal hotel of the teeming rice-metropolis, the Trung Chau. Meals were eaten at the local Vietnamese restaurants, and this was to be the case for two years until a military cantonment could be built. After that time, the Americans with RMK were allowed to use the military messhalls.

The initial job of the survey party was to locate housing, hire office space and warehousing, and survey the sites. The initial project was to construct an ammunition depot and wharf about four miles west of Can Tho. The ammunition depot was to be a large one, with ten ammunition storage magazines, two 40-man barracks, a messhall, garage, company headquarters, generator shed, latrine, and warehouse. It was also apparent that a new VNAF airfield would have to be constructed at Binh Thuy, neighbor to the ammunition depot and wharf. Work on that did not start until February, 1964.

Despite security problems, the carpenter and mechanic shops were finished just before Christmas. And an area was being stabilized for the anticipated arrival of an American rock crusher. On the afternoon of January 4th, 1964, a raiding party of Viet Cong penetrated the job site and blew up a D7 bulldozer and a 3-wheeled roller, with plastic charges.

While the first projects of the RMK consortium were being carried

out in Vietnam, Seabee Teams, those pioneers among military engineers, were being deployed to assist in the rapid deployment of Green Beret Special Forces teams in the backwoods areas of Vietnam.

CHAPTER FIVE

Seabees Ascending

If sophisticated foreign intelligence agents had been aware of the importance of the Special Forces in our new army, they would have watched the deployment of Navy Seabee teams especially closely. For by the end of 1962 there were to be 26 Special Forces A-Team camps in Vietnam. From early 1963 to late 1965 many such camps were to be built or improved by the Seabees. Of course, the Seabee teams in Vietnam also helped Vietnamese civilians in Civic Action projects.

In the latter part of 1963, two teams designated for the Rural Development Program were deployed, and from October of that year, the USOM (U.S. Operation Mission—later AID) supported and sponsored them. The average cost per team, per deployment, was $88,000 to the sponsor, for materials, transportation, etc. The cost of the Navy for outfitting, training and pay and other related costs, $109,000.

In connection with the Special Forces, the Seabee Teams were tasked with building outposts where the Green Berets could train and utilize local manpower to fight off guerrilla incursions. Most of the camps were in the northern areas, where the Special Forces found willing volunteers amongst the Montagnards, the Malayo-Polynesian peoples who inhabited the levels above 2,000 feet. They were generally anti-Communist in sentiment.

The Montagnards were a nomadic people who practiced primitive slash-and-burn farming, and followed animistic religious beliefs. They were the original stock of this area and had been driven into the highlands by the more numerous Chinese peoples, and the Khmers moving in from the north and west. They tended to be fiercely independent, and with Special Force coaching, they garrisoned the frontier areas and made patrols and offensive sweeps into regions known to be Viet Cong hideouts.

The mission of the Seabee Teams was to build the Special Force and irregular-troop strongholds, and fortify the camps strongly enough so that they could better withstand attacks by marauding guerrillas. Frequently the guerrillas were well-equipped with machineguns, mortars, and sometimes with such extra refinements as flame-throwers and 57mm recoilless rifles.

The Seabees had to build complete camps with bunkers, earthen parapets or berms, and protective fields of fire and layers of mines. Sometimes, when military supplies were short, the Seabees would improvise by using such home-grown barbed wire protection as fields of *punji* stakes, sharp bamboo slivers stuck into the ground in close-packed belts to impede any surprise attack, with a few strands of wire strung above and dangling tin cans to detect movement. The *punji* fields were a device borrowed from the Viet Cong, and in the absence of more effective barbed wire coils, they did have the effect of slowing enemy movement.

A principal task of the Seabee Teams working with the Special Forces was to construct tactical airstrips, a minimum length of 1,500 to 1,800 feet, to provide landing and takeoff room for the DeHavilland Caribou aircraft upon which the Special Forces usually depended for resupply.

* * * * *

The Seabee Team in many ways was very much like the Special Forces A-Team. An A-Team consisted of two officers and 10 enlisted men, and a Seabee Team consisted of one officer and 12 enlisted.

Both kinds of teams worked in the "boonies" with backwoods people. Special Forces A-Teams were trained in civic action and counterinsurgency; the Seabee Teams were trained to build. Seabee Team men were cross-trained in construction skills so that each could do the work of his mates in an emergency. They also had special training in the language and customs of the country where they were deployed. And a Navy medical corpsman was included so that regular "Medcap" medical clinics could be carried on amongst the people.

The forerunner of the Seabee Teams, as then organized, was a special unit called COMCBLANT Detachment Julliett, consisting of one officer and six enlisted men, which was formed in October, 1959 by the Commander of the Naval Construction Battalions, U.S. Atlantic Fleet, to provide technical and supervisory assistance to the Navy of Ecuador under the U.S. Military Assistance Program (MAP).

The seven Seabees of Detachment Julliett were to assist in the design and construction of a new naval academy at Salinas, a resort town on the coast of the South American republic. The detachment was also assigned the job of training a nucleus of navy personnel for Ecuador in the fundamentals of construction and engineering.

The new Academy was to be constructed on the site of the existing naval school and was expected to take four years to complete.

The Seabees departed from Davisville, Rhode Island, the Seabee training base in November, 1959. Shortly after, they started design of the first increment of the project, a powerhouse and utilities system, and a building to house the machinery. The actual construction began in late March of 1960, under LTJG J. H. Owens, CEC. Successive project officers were LTJG J. H. Chequer, and in April of 1961, LT R. Resnick, who stayed with the Detachment until the task was completed.

The third and fourth (and last) increments of the Ecuador Naval Academy included a field house, 28 housing units for married officers and enlisted men; a bachelor officers' quarters, a hospital and an armory. The Detachment finished its work in 1962 and had achieved all of its building objectives, and had also trained the nucleus of the construction force for the Ecuadorian Navy. The work was considered so successful that in 1961, in the wake of a severe earthquake in Chile, the Chilean government requested a similar naval construction detachment to assist in the repair of the damaged port area in the naval shipyard in the coastal town of Talcahuano, and the first Seabee Technical Assistance Team (STAT ONE) was deployed to Chile.

STAT ONE, like Detachment Julliett, was composed of six enlisted men and one officer— LT L. D. Lawson. Like Detachment Julliett, STAT ONE had a primary mission of teaching Chilean workers the construction skills they needed to do the job at hand.

As of this early date in Seabee Team history, the purpose of the

team had been delineated, but size and shape still had to be defined. The other early STAT deployments to the Dominican Republic in January 1963, and Upper Volta (former French Equatorial Africa), still did not fix on the standard size and shape of the Seabee Team units. It remained for the Southeast Asia war to bring this to final form.

* * * * *

Early Seabee deployments in Southeast Asia involved a composite unit including the better part of Naval Mobile Construction Battalion 3, plus Detachment Zulu from NMCB–10 on Guam.

The mission of this NMCB–3 force was to construct an airfield 480 miles northeast of Bangkok, and smack up against the border of Laos. The military advantages of an airfield in this position were manifest, for North Vietnamese Army and guerrilla bands were already using the eastern Laotian corridor (the "Ho Chi Minh Trail") to run supplies and troops and training cadre down to the Viet Cong guerrillas of South Vietnam.

The rapid deployment of NMCB–3 to Nakhon Phanom was no accident. NMCB–3 was the "Alert Battalion" on Okinawa. The doctrine of the "Alert Battalion" was the result of the Seabees' 20-year, ingenious and frequently bloody history. Before we go on to the account of the Thai Seabee accomplishment which lived up to all that history, a quick account of the Seabee history is generic—and an often fascinating story.

Anticipating major military construction needs in combat situations as World War II started, ADM Ben Moreell, Chief of BUDOCKS, decided the answer was a Navy military construction force to serve as a part of the operating forces of the Navy. On January 5th, 1942, he was given the authority by the Navy Bureau of Navigation (predecessor of the Bureau of Naval Personnel). The nickname Seabee is a phonetic rendering of the acronym for Construction Battalion (CB).

Big Ben Moreell, soon known as "King Bee" of the outfit, immediately fought and won a hard battle to authorize Navy CEC (Civil Engineer Corps) officers to command all officers and men assigned to the new construction units. Opposition had been strong to the idea

that engineers, even Navy officers who were members of the CEC, could command in combat situations.

The first Seabees were mostly highly skilled workers recruited from building jobs. They were given military training, sometimes in a cursory way during the first days. Later, they shared hard amphibious assault training, not always as easily as their younger Marine, Army and Navy compatriots. The average age of the Seabee in the early days of World War II was 37. The Marines had an ironic saying: "Don't shoot that Seabee—he might be some Marine's father."

The Seabees and their CEC officers distinguished themselves with bravery and their famed inventiveness and "Can Do" under the most adverse conditions.

They lived up to the battle cry which Admiral Big Ben Moreell had given them, "Construimus, Battuimus," or "We Build, We Fight".

The inventiveness and resourcefulness of the Seabees became legendary, from the very start at Guadalcanal when they used coke bottles for telephone pole insulators and sections of used oil drums for culverts.

During World War II, 325,000 men became Seabees, and 11,400 officers. When the war ended, there were 238,000 men and 8,000 officers on duty.

At war's end, the Seabees had built more than 400 advance bases. In the Pacific alone, 111 major airstrips, 441 piers, hospitals for 70,000 patients, and housing for 1.5 million men.

With the violent demobilization in the wake of war, the 238,000 sliced to 10,000, and the Civil Engineer Corps from 8,000 to 400. Just before the outbreak of the Korean war in June of 1950, the number of active Seabees was only 3,300. Thanks largely to aggressive planning, and the Seabee Reserve, the Seabees were boosted back up to more than 14,000.

During the Korean war, Amphibious Construction Battalion (PHIBCB) ONE in September, 1950, built the same kind of "Instant Piers" at Inchon (Wolmi-do) that they had managed so beautifully in Sicily, Salerno, the Normandy Beachhead, and a wide spectrum of Pacific landings from Guadalcanal to Okinawa. PHIBCB–1 had a pontoon pier working in that 30-foot tide so that General Douglas MacArthur could walk ashore with dry feet on the second day.

Another distinguished project of the Seabees in the Korean war was "Cripple Creek", at the port of Wonsan on Yo Do Island, where they had 35 days to build an airstrip, and had it ready in 16 days.

The field was built under enemy fire. It was boldly constructed behind enemy lines to serve as an emergency field where pilots could save themselves when their planes were damaged by enemy anti-aircraft fire rather than falling into enemy hands. By war's end 60 fliers had used this escape route to safety.

Seabee Detachments maintained the many expeditionary airbases put up by Army Engineers, like K–14 at Seoul and K–2 at Taegu. A volunteer party of eight, PHIBCB–1 and Army Engineers, in a celebrated raid, penetrated enemy territory at Yong Dong Po and made off with three locomotives intact. With typical Seabee dash, they grabbed 15 cases of beer from the Kirin Brewery en route—then had to stop to repair a damaged truck on the way out under enemy machinegun and mortar fire.

In the Korean emergency, the Navy deployed Naval Mobile Construction Battalions 1, 4, 6, 7 and 8 from the Atlantic Base at Davisville, R.I. and NMCB's 2, 3, 5, 9, 10 and 11 on the Pacific side from the base at Port Hueneme, near Santa Barbara, California.

In the Korean war time span, the Seabee Battalion structure was revamped. The evolution began just before that war. In World War II, the battalion had been 1,080-men strong; in the Korean Emergency, the NMCB (Naval Mobile Construction Battalion) was a little more than half of the WW II strength.

At the start of the Vietnam War, the authorized allowance for a battalion was 21 officers and 563 men. Later, the heavy requirement for road and airfield construction boosted the manning by 125, especially mechanics and equipment operators. And 53 more were added for extra security in that turbulent environment. Thus there were 738 enlisted men and 24 officers.

Two years before the Korean war was over, the Seabees started their biggest earth-moving job in their history. It was for the Naval Air Station at Cubi Point in the Philippines, about 50 miles north of Manila. It was begun in early 1951, and the job was to build a huge bsea for our fast aircraft carrier forces.

The task was to take five years. It would need the efforts of five battalions, and it was to prove invaluable to our war effort in the Vietnam war, because it was the most advanced base for our biggest

carriers. It is only 1,000 miles from Manila to Saigon, a short jump in terms of Asian and Pacific distances.

The architect-engineer contract for the design of all facilities went to the Bechtel Corporation. The massive dredging contract, for a deep water port for the world's largest ships, the carriers, was assigned to the MidPac Corporation of Honolulu, Hawaii.

But the spade work remained with the Seabees. Their work involved moving the tops of two mountains to provide the fill to build the 8,000-foot runway (with a 1,000-foot overrun on each end). In addition, they constructed the pier and a variety of other facilities.

The first problems were to hack a road through the tall and jungly rain-forest and help to move a native village to another spot acr0ss the bay. Malarial mosquitos and pythons as long as 16 feet didn't help.

The battalions involved were MNCBs 2, 3, 5, 9 and 11. More than 3,000 men were working at the peak of the effort. The biggest job was to chop a slot 135 feet deep through two of the hills and move the overburden from both sides into the bay as fill.

The Seabees moved 17.7 million cubic yards of earth for the airstrip, and 2.7 million more elsewhere.

They also helped the contractor (MidPac) to dredge 7.1 million cubic yards from the bay to clear the deep water port.

While the work on Cubi was in mid-flight, in 1954, the Passage to Freedom job in Vietnam, earlier reported in this book, emerged.

Next after Cubi came a large new venture for the peripatetic Seabees: To send a battalion to the South Polar region. Earlier, in 1947, 183 Seabees had gone with RADM Richard E. Byrd's Operation Highjump to the Antarctic continent, and built a base camp.

In the summer of 1955, a new NMCB (Special) was formed at Davisville, Rhode Island for cold-weather training. Detachment Alpha nearly 2,000 men, sailed for Antarctica in November to take part in Operation Deep Freeze. This expedition was aimed at establishing permanent scientific stations on the shore of McMurdo Sound.

They subsequently built more than 200 buildings at seven Antarctic bases. But the first giant step, finished in October 1956, was a 6,000-foot runway on the ice at McMurdo. For the first time in Antarctic history, planes were flown directly to the continent.

In October, 1956, a large C–130 transport plane was flown in, carrying RADM George Dufek, the expedition commander. In another plane, equipped with skis, Admiral Dufek flew from McMurdo to the South Pole and made the first landing there.

Three weeks later, a party of eight Seabees, with sled dogs, were flown into the polar site in two ski-equipped planes, more than 500 tons of supplies were air-dropped to them.

The buildings erected by the Seabees at this Polar Station were made of laminated layers of aluminum, glass wool and wood. They were connected by tunnels under the snow and ice so that the inhabitants did not have to venture out into the 35–100 degree-below-zero cold.

During the first winter at the Polar Station, the scientists and Seabees experienced one period of 101 degree-below-zero cold.

In the summer months (December, January, February down there) the temperature rises to a luxurious 30 or 35 degrees below zero. In the average South Polar year, outdoor work for any length of time is limited to about 100 summer days.

Incidentally, the McMurdo Sound base entered a new era in 1962, when a nuclear power station was built by NMCB ONE to supply electricity for light and utilities. A selected group of Seabee men and CEC officers had undergone extensive special training to install and maintain this revolutionary new equipment. The remainder of the Seabees on Antarctica were grateful that their onerous job of hauling fuel oil across the ice shelf was greatly diminished.

After the start of Operation Deep Freeze in 1956, in Seabee annals, came Lebanon, in 1958. The President, Camille Chamoun, of that tiny Arab-Christian nation on the eastern shore of the Mediterranean, asked for U.S. assistance to preserve independence when an Arab faction attempted to overthrow the freely elected government.

The U.S. Marines went in with an amphibious expedition on July 10, 1958 to remain as a stabilizing force for several months. With their first waves went Amphibious Construction Battalion–2—PHIBCB–2 and their pontoon piers, to get troops, supplies, guns and tanks ashore without delay. They also built a road from the landing beaches to the airport.

The last of the Seabee history milestones before our intensified involvement of 1962 in Vietnam was in Cuba. There, the "Missile

Crisis" broke over the U.S., and there was a grave danger of the outbreak of nuclear war between the U.S. and Russia. President Kennedy and the USSR's fiery Premier Krushchev negotiated intensely about the presence of Russian missile bases in Cuba in 1962.

That question was resolved in agreement. But the dependable Seabees were sent to beef-up the critically important U.S. military enclave in Guantanamo Bay, Cuba. The Seabee mission was to build machinegun and artillery positions, roads, command posts and communications systems.

For this work, NMCB–4 was rapidly deployed. NMCB–7 joined them, with detachments from NMCB–1 and NMCB–8.

And so we return to 1962 in Thailand, where we had cut back from the story of the first full battalion-size deployment to trace some of the Seabee battalion history elsewhere during the Cold War years.

NMCB–3 was in Nakhon Phanom, where they were charged with building an airfield on the Thai eastern border with Laos along the mighty Mekong River.

The lightning deployment of NMCB–3 to "N.K.P." was possible because of the availability of an "Alert Battalion", a Seabee institution, in Okinawa only 1,500 miles away.

Detachment Yankee, the first contingent from NMCB–3, was airlifted by four-engined turboprop C–130 directly to Ubon, then trucked across country to Nakhon Phanom.

The commanding officer of NMCB–3 was CDR David P. "Ho" Whyte. Despite the driving rain of that Thai winter monsoon, and such miscellaneous obstacles as malarial mosquitos, the small but deadly krait snake which existed in the area in considerable numbers, and the activity of Communist agitators slipping over the border from Laos, the runway was opened on June 1st, 1963, and dedicated that day. General Harkins, the MACV commander, and CAPT James V. Bartlett, then Chief of Staff to Commander Construction Battalions Pacific Fleet, flew in with Thanom Kittikachorn, the Thai Deputy Prime Minister and Defense Minister. Somehow the Seabees, in their usual hospitable fashion and with their customary "Can Do" techniques of improvisation, managed to feed everyone a steak dinner in the field.

It was May 28, 1963 that the first 13-man modern Seabee Team, STAT 0902, landed at the Royal Thai Ubon Airport. The Team's name was derived from its parent battalion NMCB–9. The 02 indicated that it was the second Team formed by NMCB–9.

That day, three fat-bellied, waddling U.S. Air Force C–130 turboprop freight planes brought the Team to Ubon. The C–130s also carried the Team's construction equipment. The equipment fitted in with the constitution of the Team: two Builders, two Equipment Operators, two Construction Mechanics, one Hospital Corpsman, one Construction Electrician, one Utilities man, one Steel Worker, one Engineering Aid, and the officer or warrant officer who would be the officer-in-charge. The equipment which these skilled builders and technicians would be using was in two parts, automotive and construction:

Automotive: a jeep, two 1¼-ton trucks, a 2½-ton dump truck, one 1½-ton trailer, one 10-ton tilt-deck trailer, one 400-gallon tank trailer.

Construction: one concrete mixer trailer, grader, front-end loader, crawler-tractor, electric floodlight, and 15-kilowatt generator.

This STAT, under the command of Chief Warrant Officer Paul G. McCart, went into action immediately at the town of Bon Khae, a small village of about 300 people some 60 miles from the Laotian border, 30 miles from Ubon to the west.

STAT 0902 had flown in from Okinawa, where NMCB–9 was deployed. The Team had gone back to the Seabee school at Port Hueneme, California for cross-training in their special skills, and in language, political, cultural and religious background.

At Bon Khae, the Seabees worked a 96-hour week and built an earth dam measuring 450 yards across, and 21 yards high. The water impounded by this dam would allow the farmers of the area to grow either three or four crops of rice annually instead of the previous one rainy season crop.

And in line with the mission of the Seabee Team to train local people in building, 10 students from Ubon were brought along to learn the mechanics of earth dam construction, and the necessary road and bridge building that would have to be completed in connection with the dam area.

The weather was very unfavorable. For three of the six months the

Seabees were at Bon Khae it rained eight to 12 hours per day. The 10 village students who showed up to learn caught on quickly and soon were pitching in to help with the Seabees.

And a group of volunteer workers, farmers who worked in the fields during the daylight hours, came out as the day wore on to help. They principally hauled mud and cleared waste, and they received no pay for their efforts. And at night, other villagers came with flares and food and protected the equipment from possible incursions by insurgent revolutionaries slipping over from the border of Laos. Chief Warrant Officer McCart and his team had done a superb job of selling their project to the villagers. McCart said later: "It was the first time those people had ever seen Caucasians walk in the mud or do any real work."

There were troubles with the insurgent operators who were drumming up any available discontent to turn the villagers against the Americans. McCart said: "A couple of agitators did come out. They told the people they ought to get paid for their work. Only a couple listened to them, then they came and asked why they were not paid. I told them they ought to pay us for coming there and building their dam."

Chief Warrant McCart's tactics worked. He said there was no further argument, the agitators disappeared.

The gregarious Seabees found the local Thai friendly. The Thai spent considerable time around the camp talking to the Americans. They also helped to grade the one and a half miles of a main road in the nearby city of Warin, and another stretch of nine-tenths of a mile in another section of the city. The Seabees also voluntarily put up new outdoor tables and benches for the Buddhist monks at their temple, or Wat in Ubon, and they arranged picnics and parties for the local kids around Warin and Bon Khae on Sunday afternoons, with soda pop and hot dogs, and games and balloons.

The Team was also very successful with sick calls. The corpsman treated 2,685 villagers in his dispensary during the Team's six months in Thailand.

STAT 0902 was relieved in November, 1963 by STAT 0901, and the pioneers of STAT 0902 were pleasantly surprised as they prepared to leave Bon Khae on the day after Thanksgiving, 1963, by an unforeseen event: The headmen of the village came to McCart in a

deputation, and sadly asked that the Team might stay and help the villagers further. "That," said McCart modestly, "sort of broke us up."

The first two Teams (still called STAT, for Seabee Technical Assistance Team) to support the Special Forces were 0501 and 0502.

Team 0501, led by LTJG Robert L. Ferriter, deployed to Dam Pau, a few miles southwest of the resort city of Nha Trang. STAT 0502, under the command of LT Clyde V. W. (Mike) Popowich, was sent to Tri Ton, about 100 miles west of Saigon and less than 20 miles from the Cambodian border.

At Dam Pau, 0501 added 800 feet to the airstrip's length and raised the surface two feet above the surrounding low terrain.

The Seabees of 0501 also pitched in to help the local inhabitants with repairing their dirt roads, and clearing 45 acres of jungle for use as farm land. They also added nearly two miles of irrigation ditches and improved a number of local water wells. They also trained villagers in producing concrete blocks for use in construction in and around Dam Pau.

The Team had done its tasks expeditiously, and on March 15th, they were assigned the mission of reopening 14 miles of abandoned road in the foothills about 50 miles southeast of the mountain capital of Ban Me Thuot. They also had to rebuild a Green Beret A-Team camp at Buon Mi Ga. At the town of Buon Ti Sranh, the Seabees organized and trained a local labor force of 130 Vietnamese. In clearing the overgrown road, which turned out to be essentially a trail and not a road at all, the Seabees encountered much Viet Cong harrassment. The enemy placed hazards such as foot-traps and man-traps which were cleverly camouflaged holes filled with *punji* stakes or spring-loaded spike mechanisms to gore the unwary passerby.

As a departing gesture, the Seabees responded to the request of a village chief and repaired four large ceremonial gongs by brazing their cracked surfaces.

At Tri Ton, close to the Cambodian border and deep in the recesses of the Delta area, STAT 0502 encountered determined Viet Cong opposition as they upgraded 25 miles of roads, built 18 single and four double culverts, repaired two 40-foot bridges, and raised the level of a 1½ mile stretch of the local road two feet above the surrounding swampy rice paddies. They also smoothed 15½ miles of roads, and built an 1,800 foot airfield and helicopter pad for the Special Forces.

They discovered a new rock quarry and performed site grading for a village for refugees. And they finished drilling three water wells, a dam and a bridge at O Lam. All this was rapidly done, and in early June, the Team was readied to move to Dan Chau near the Vietnamese coast, where they built another Special Forces camp.

STAT 0301 arrived in Ban Me Thuot in July, 1963, to relieve STAT 0501, and took over that Team's equipment allowance.

This Team, under LTJG Richard Y. Wisenbaker, made a convoy with their equipment to Bon Sar Pa which was 40 miles southwest of Ban Me Thuot, and only 2½ miles from the Cambodian border.

There, two of the Team, EOC James E. Gardiner and SW1 Wayne R. Jordan, concocted a "Can Do" improvised well-drilling rig in the best Seabee tradition. They used a discarded military dump truck, and harnessed the engine to a patched-up drilling apparatus on the back of the truck. In a letter to LCDR Jack Wright, Officer In Charge of the COMCBPAC Seabee Teams Detachment for the Republic of Vietnam/Thailand, in Saigon, Wisenbaker enthused: "My well rig works like a charm. We're drilling four feet an hour through clay and a foot an hour through laterite and lava. The drillers are putting out the casings of the first well now."

Besides finishing the Special Forces camp and airstrip at Bon Sar Pa, STAT 0301 upgraded two miles of roads, finished the aforementioned well, and built a two-room schoolhouse for the local Montagnard children.

Just before the Team's redeployment to another site, the first direct attack by the Viet Cong occurred, on the night of September 16th. The Seabees ran for their assigned defensive positions and manned the one 60mm mortar tube which was the extent of their heavy weapons. But the Seabees, the Special Forces, and the Montagnard troops which the Special Forces detachment had trained, drove off the enemy attack.

The next deployment was at Bu Prang, a nearby Special Forces camp also on the Cambodian border. And the mission was similar, to construct an 1,800 foot airstrip so that Caribou aircraft could land and takeoff. And the Seabees also were tasked with upgrading the adjoining road. On a volunteer basis, the well-drilling team of EOC Gardiner and SW1 Jordan finished a 110 foot well with their Rube Goldberg drill rig.

These initial well-drilling efforts were to lead to a more comprehensive program. In March of 1964, the Seabees implemented a

series of concerted well-drilling projects. Three Seabee well-drilling teams, consisting of a total of 16 Seabees, were formed to put special emphasis on this area. The USOM Director of Rural Affairs, Ogden Williams, aware of the amazing record of the Seabee Teams thus far in teaching Vietnamese trades like brick-making and the laying of concrete, had convinced USOM that Seabees were highly valuable in training skilled and semi-skilled workers in Vietnam. This was a crying need in such a rice-basket poor and essentially backward Asian nation. Drilling wells would build immense good will, and more Vietnamese would be taught semiskilled trades as a by-product.

The leader of the drillers was EOC Willy M. Gipson, the Chief Well Driller of the Seabees. Two more well-drilling teams arrived in Vietnam in April and May, and as of that month, there were a total of 26 Seabees assigned to five teams, at Tan Hiep, Ben Luc, Tac Van, Cat Lo and Dong Ba Thin.

All of the teams were successful, although the first holes at Tan Hiep and Ben Luc were abandoned after drilling to more than 600 feet without bringing in potable water. At Tan Hiep, the team did succeed, and was the first to bring in a potable deep water well south of Saigon. The petty officer in charge of this team, EO1 Laddie D. May, had been an oil field worker. After hitting drinkable water at 224 feet, May said: "I got a bigger thrill out of seeing this one come in than I ever got back in Texas!"

The well-drilling program won commendatory comment from USOM, and a measure of its success was that many times the Viet Cong took violent notice of the work of the Seabees. On July 16th, 1964, two members of one of the teams, SW2 William W. Trottno and SW3 Thomas M. Charles, were wounded when their convoy, going to a drilling site, was ambushed by Viet Cong with rifles and hand grenades.

This kind of exercise of American ingenuity, and the concomitant quality of courage, was not unusual. It was found all over the far-spread American military assistance effort in Vietnam. By October of 1963 there were 31 Special Forces A-Teams working in the country, and ingenuity and improvisation were characteristic of Special Forces and the Seabees who worked with them.

But the plain fact was that this widespread military net, like our other advisory and support activities, was not enough yet to stem the advancing, expanding efforts of the Viet Cong and North

Vietnam Army forces. The VC and NVA forces, and their close-coupled propaganda-subversive effort, were gradually gaining control of the majority of the nation's terrain. And the effort of the VC to undermine the authority of the Ngo Dinh Diem government was showing a major effect in the news headlines of the world.

Two vastly important assassinations at opposite ends of the world marked this period of struggle against the unscrupulous and tyrannical forces of the NVA and VC. The victims of the assassins were the leaders of the U.S. and the RVN, President Kennedy and President Ngo Dinh Diem.

Both killings happened in November of 1963, but were otherwise unrelated. The killing of Diem, however, marked a period of indecision and relative inaction which helped the Viet Cong cause to such success that they planned for victory in 1966 or earlier. Of this, more soon.

President Diem was killed November 2, 1963 by a sub-officer of a South Vietnam army commander, General Duong Van "Big" Minh. Minh rode that revolt to the job of Premier for a brief time (six months).

President Kennedy fell to the rifle of a frustrated handyman on November 22.

Vice President Lyndon B. Johnson took over as President the day of President Kennedy's death. President Johnson kept Secretary of Defense Robert S. McNamara on the job as prime mover of our military effort, and maintained his posture of "measured response." The phrase indicated a policy of restrained reaction to the immediate overt actions of the enemy. The strength of our military assistance continued to be through advisers, Special Forces, and support troops like the Army and Marine helicopter units and the builders and suppliers.

Many of our troops, including the advisers, the helicopter pilots, and the engineer troops, were frequently exposed to action and their rule of engagement in this restrained war was that they could shoot back if fired at. By the end of 1963 our casualties had risen to 120 killed and 261 seriously wounded. They were Special Forces, helicopter pilots, and advisers. In the two years (up to December 31, 1963) RMK had been working, four Vietnamese workers had been killed by the enemy, and six wounded. Two American foremen had been wounded and one TCN (Third Country National).

At this point in the building operations in Southeast Asia, coverage was far-flung but very thin. Even farther-flung were major efforts being carried on by the Yards and Docks OICC in the Philippines, which were to be of great importance as the American involvement in the Vietnam war ballooned.

Over a period of years, the Navy base at Subic Bay, near Manila, had been undergoing expansion by the Seabees and civilian contractors in a mammoth effort.

Also near Manila, the U.S. Air Force base, Clark Field, constructed by civilian contractors, was to be a huge boon to the aerial supply routes for transmitting high priority cargo across the Pacific. Back in Washington, plans for the building of a 40-mile pipeline, to carry fuel and oil products between Subic Bay and Clark Field were already being considered. But it was to be more than a year later, 1965, that OICC Southwest Pacific was instructed to make full preparations to begin this pipeline.

In Saigon, in January of 1964, a new DOICC, CAPT John F. Beaver, arrived to take charge. When he checked in, construction work on the RMK sites was between $1.3 million and $1.5 million Work in Place per month and was declining, but before the year was over, it was to start a rapid climb upward and would reach about $16 million for the year.

During this momentous year, when tactical developments in Vietnam were to foster the explosive proliferation of the building effort, the RMK labor forces across the length and breadth of Vietnam hovered between 2,500 and 4,000 men.

Beaver, interviewed in 1970, when he was serving as Deputy Commander for the Atlantic Division of NAVFAC-ENGCOM with headquarters at Norfolk, Virginia, commented in recollection: "I enjoy remembering those days. They were adventurous, and there was a big job to do."

The biggest construction job going on during CAPT Beaver's first days in Saigon was building of the new airfield at Binh Thuy, near Can Tho, deep in the Mekong Delta section of South Vietnam, on the southern mouth of the Mekong called the Bassac. Beaver recollected that the terrain around Can Tho was low, swampy, and very much in need of fill. There was one dredge, supplied by the Vietnamese, and it was worked practically full-time.

"At that time, we had one crummy dredge. It was a pretty tired

old thing, but we worked it round-the-clock: 22 hours of dredging and two hours of maintenance. All the VC had to do was sink the dredge and we would never have built the base. It's out there in the middle of the Mekong or the Bassac, whatever you want to call it, naked as a jaybird, miles from civilization. And the VC harrassed the hell out of us. When I say harrassed, they threw a hand grenade into our office, they blew up the rock supply trucks, and some actually came in one night and stuck sticks of dynamite on them (the trucks) and blew them up with the operators asleep along side.

"Our rock supply came down from the quarry in the heart of the VC country. They had been paid their tribute already. They'd already collected their taxes, then they blew it up.

"Another time they came in, in broad daylight, and took prisoners of the workers and shot the labor foreman in the back.

"We got them (the prisoners) back a couple of days later. One of them the Viet Cong didn't want to release, because he had Army shoes, ARVN shoes, though he wasn't one of the ARVN—I guess he had stolen them or bought them on the black market or something and he was paying for it.

"These were just token harrassments to show that they were around and had control. But they never once stopped the job. We used to have the feeling that we were working for the VC. They were confident that what we were building was going to be theirs someday. If they had sunk the dredge, which they could have—what does it take to sink a dredge? Float a mine down the stream and let it fire off, BOOM! Down she goes, no airport."

The Viet Cong were far from the only enemy. One major foe was the sultry, stormy Vietnam rainy season. After teeming late summer rains in 1964, the new airfield at Binh Thuy was jokingly known as "the Navy's only aircraft carrier on the Mekong."

In fact, the silt and muck upon which the airfield was built had no bottom, the runway and taxiway were floating on a sea of Mekong mud. Yet the airfield survived and it did not sink, or settle, as much as had been expected.

Beaver remembered other major projects being constructed at that time by RMK. They were cantonments at Sa Dec, near Can Tho, and farther north, a new hospital, the Eighth Field Hospital at Nha Trang, and the cantonment and hospital areas at Qui Nhon on the coast between Nha Trang and Da Nang.

Also under way, in the more northern section of South Vietnam, was a re-do of the Pleiku airfield, at the center of the plateau area, from Pierced Steel Plank to three-inch asphalt pavement.

And the biggest project in the north, those days, was the re-building of the Da Nang Airfield.

In mid-'64 there were rumbles that a shut-down of construction in Vietnam was imminent. Ironically, this was just before the outbreak of the really big construction effort. In fact, the BUDOCKS Headquarters was then developing plans to phase out and terminate the contract.

During this period of hiatus, the contractor was busy doing repair and maintenance on some of the airfield construction he had put together earlier, like the military airfields at Vung Tau, Bien Hoa, Soc Trang, Tan Son Nhut and Nha Trang.

During early 1964, RMK operations had been directed out of Saigon by a long-time "construction stiff", H. M. "Hank" Hudson. At this point in construction history, a major concern of construction men was to find rock—and this continued to be the case as building operations went on. And Hank Hudson, following his arrival in Vietnam in December of 1963 spent considerable time looking for rock sources. This constant search for quarry sources was to lead to his capture by the Viet Cong, and a harrowing, hair-breadth escape from their clutches.

CHAPTER SIX

The Dawn of the Big War

In January of 1964, a new MACV Commander came on the scene to take the place of GEN Harkins. He was GEN William C. Westmoreland, *arch-type of the handsome military commander* and recently Superintendent of the U.S. Military Academy at West Point. At first, he broke in as Deputy Commander. Then, on June 20th, he assumed the position as MACV Commander. GEN Westmoreland had a distinguished Army record as a division and corps commander and staff officer.

The Government of South Vietnam was then attempting to ride out a tumultuous political situation, a story of dissent fanned by the Viet Cong and the NVA. Three days after GEN Westmoreland's arrival, MAJ GEN Nguyen Khanh, who became South Vietnam's president, led a bloodless coup which overthrew the previous government headed by MAJ GEN Duong Van "Big" Minh.

This, as GEN Westmoreland points out in his REPORT ON THE WAR IN VIETNAM, was the second major political upheaval in three months. And: "Over the next year and a half, a series of coups, attempted coups, and counter coups followed one another in rapid and alarming succession. Government effectiveness steadily declined throughout this entire period. South Vietnamese civil servants became dispirited and inactive in the face of this continued political instability. Institutions of government formed during the regime of President Diem progressively deteriorated and in some instances . . . elements of the intelligence and police forces disappeared altogether. The gains which had been made so slowly and laboriously in the previous eight years were steadily vanishing."

During 1964, the Viet Cong gained strength, and the Hanoi High Command decided to standardize the armament of the Viet Cong units. Whereas previously the Viet Cong had improvised with

captured U.S. weapons and old French arms, augmented by a potpourri of Chinese Communist armament, now the North Vietnamese supply train carrying munitions and material through the "Ho Chi Minh Trail" was beefed up, principally with vast increases in supply of the AK–47 fully automatic assault rifle. The AK–47 was a Chinese-made copy of the Russian 7.62 calibre design.

And the Viet Cong, encouraged by the successes in guerrilla action during '63 and '64, formed the Viet Cong 9th Division, comprising the 271st and 272nd Regiments, agglomerated in Tay Ninh Province near the Cambodian border and the jungly terrain north of Bien Hoa. The revolutionary doctrine of the Chinese and North Vietnamese military leaders, Mao Tse Tung and Ho Chi Minh, taught that the guerrilla stages of the Communist Revolution would lead to the formation of larger units so that the defending forces could be defeated in a conventional larger-scale military engagement, as was the case in North Vietnam at Dien Bien Phu.

During 1964, the Viet Cong political organization extended to thousands of hamlets across the country, and a selective campaign of terrorism and assassination was directed at the functionaries of the Saigon government. Assassination and kidnapping in '64 averaged nearly 2,000 a month, and the Viet Cong was well organized with very heavy propaganda orientation for its military recruits.

GEN Westmoreland commented in his REPORT: "Poorly motivated South Vietnamese units were no match for the well disciplined Viet Cong forces . . . Offensive operations were timid and of short duration. Vietnamese troops depended almost wholly on air and artillery support, which usually came too late to prevent the VC from disengaging after inflicting heavy losses on South Vietnamese forces."

The General requested an expansion of the U.S. advisory effort, especially at the province level. As of the time of the Tonkin Gulf episode, the American forces of advisers, Special Force detachments and helicopter troops were more than 21,000. But there was no inkling yet of the vast size of the American commitment of conventional fighting forces which followed the Tonkin Gulf.

Thus far in the American involvement in the Vietnam war, the majority of our building operations had been in airfield construction, with roadwork and cantonment following as minor seconds and thirds in the area.

Even amongst the Seabees, the proportions of efforts were the same as for the civilian contractors.

The construction of airfields, even the abbreviated airstrips engineered for Special Forces camps, was a large and demanding building operation. And roadwork, even the kind of dirt road with primitive bridges and culverts which were associated with Special Forces camps, generally involved the next-largest-scale operations. At the beginning of 1964, 25 Special Forces camps had been built along the Cambodian and Laotian borders, with airstrips. By the end of the year, with the added impetus of the Tonkin Gulf episode to spur our logistics preparations, the number of camps had doubled.

In Thailand, most of the existing military airfields had been refurbished by the contractor forces, and a brand new airbase built by the Seabees at Nakhon Phanom. If the Communist push from the north reached the verge of larger-scale war, Thailand and the RVN would have a better measure of preparedness for the air involvement. And the airfield construction was invaluable as well in the newly evolving tactics of helicopter war against insurgents.

In previous wars against guerrilla forces, such as France's campaigns against the Algerian revolutionaries, 1952–62, troop-carrying helicopters had not been sufficiently developed for large-scale deployments.

But in Vietnam, American Sikorsky H–34s, Vertol H–21s and Bell HU–1s, the famous "Huey", had given the ARVN troops advantages of speed, mobility and sometimes surprise, which were clearly exploitable in any such conflict. In the beginning of 1964, the U.S. had 248 helicopters in Vietnam, and this number grew before year's end to 327. This made it possible to put a U.S. Army transportation company or U.S. Marine Corps helicopter squadron in support of each Vietnam Army battalion. In more specific terms, the helicopter enabled troops to surprise guerrillas in their own backyards, to take them on the flank or in the rear, and to move about rapidly during an engagement so that troops could be transferred in numbers to any weak points.

But, as of August 1964 when the Tonkin Gulf incidents occurred, the future of the government of South Vietnam looked dark, or as GEN Westmoreland termed it, "ominous."

In his appraisal of the available systems of logistics, supply and construction, "there were inadequate ports and airfields, no logistic

organization, and no supply, transportation or maintenance troops." It was understandable that senior U.S. military planners should have grave doubts about the future conduct of any war against Communist forces in South Vietnam.

In July of 1964, MACV headquarters in Saigon received intelligence reports from ARVN troops in the northern or First Corps area of South Vietnam indicating that officers, men and propaganda organizers from the NVA had appeared with Viet Cong in that area. Similar reports came from the Laotian border areas adjacent to the enemy supply routes to Vietnam. On July 4th, an enemy force of regimental size overran the Special Forces camp at Plei Mrong (built by the Seabee Team, STAT 0302) and killed 50 troops of the CIDG (Civilian Irregular Defense Group) garrison there.

Two days later, a regimental size enemy force attacked and overran most of the Nam Dong Special Forces camp, between Da Nang and Hue, and killed 55 South Vietnamese, two U.S. Special Forces soldiers, and an Australian adviser. The enemy was feeling his strength, with a blatant manifestation on August 2nd, when North Vietnamese torpedo boats attacked the U.S. Navy destroyer MADDOX well outside the 3-mile limit, in the waters of the Tonkin Gulf. A second attack followed on August 4th against the MADDOX and another U.S. destroyer, the C. TURNER JOY.

President Johnson's TV message followed the next day, as aircraft from U.S. carriers in the Tonkin Gulf made bombing strikes on the North Vietnamese PT boat bases and fuel storage areas which were believed to be involved in the previous days' attacks by the enemy.

The events in slightly greater detail were: The Defense Department announced August 2nd that three North Vietnamese PT boats eurlier that day had attacked the MADDOX with torpedoes about 30 miles off the coast of North Vietnam. A counter attack with the aid of four fighter planes which came from the U.S. carrier TICONDEROGA had put one of the PT boats out of action with gunfire. The carrier reported that two other PT boats were damaged by strafing fire from the fighters' machineguns. The MADDOX took one machinegun round in the stern, without any injuries.

As a result of this action, President Johnson directly ordered the Navy to place another destroyer on patrol with the MADDOX and to provide a more adequate air patrol above them. He ordered the

Navy, in a message made public the following day, August 3rd, "to issue orders to the commanders of the combat aircraft and the two destroyers (a) to attack any force which attacks them in international waters and (b) to attack with the object not only of driving off the force but of destroying it."

The next day, August 4th, the Defense Department announced that North Vietnamese PT boats on that day had attacked the MADDOX and C. TURNER JOY in the Gulf of Tonkin about 65 miles off the coast of North Vietnam. The destroyers and carrier-based aircraft drove off the PT boats and sank at least two of them. There were no casualties among the U.S. forces involved, and no hits or damage.

On August 4th, President Johnson notified the Congressional leaders and the opposing Republican presidential nominee, Senator Barry M. Goldwater, of his intention to take the television screen to declare the Administration's attitude towards the North Vietnam attacks. That night, the President said to a national television audience, "repeated acts of violence against the armed forces of the United States must be met not only with alert defense but with positive reply. That reply is being given as I speak to you tonight. Air action is now in execution against gunboats and certain supporting facilities in North Vietnam . . . used in these hostile operations."

On August 5th, Defense Secretary Robert S. McNamara announced that the attacks had involved bombing of several North Vietnamese PT boat bases, the naval craft in them, and one oil storage depot. He said the attacks by the carrier planes had destroyed or damaged 25 patrol boats and that the oil depot had been 90 percent destroyed. Two American planes were lost and two were damaged by anti-aircraft fire, although they returned safely. He furthermore said that no other United States attacks were planned and would not be unless there were further provocations. Later that day, it was reported that one of the two pilots shot down had been captured by the North Vietnamese. He was LT Everett Alvarez, of San Jose, California.

On August 6th, President Johnson had a White House conference which touched on Vietnam. The President revealed that he had told U Thant, Secretary General of the United Nations: "In all that we do, America's purpose is to prevent war and to prevent others from

provoking war . . . this Nation has acted and this Nation will always act when necessary in self-defense." After the talk, Thant refused to discuss the subject mentioned, but he did say that he did not believe that the United Nations Security Council could be "usefully employed in a settlement" to solve the Southeast Asia crisis.

On August 7th, the U.S. House and Senate adopted a Joint Resolution which affirmed that the U.S. would support the RVN and "take all necessary measures to repel any armed attack against the forces of the United States."

Since passing time has assigned the Number One position to the Tonkin Gulf Resolution among all the empowering documents which provided a background for the American involvement in the Vietnam war, the declaration should be examined more carefully than the other documents.

The declaration is short, with only three announced preliminary conditions—the "Whereases" and three short paragraphs following.

The first "Whereas" section specifies that naval units of the North Vietnam government have "deliberately and repeatedly attacked United States' naval vessels lawfully present in international waters", and that "these attacks are part of a deliberate and systematic campaign of aggression that the Communist regime in North Vietnam has been waging against its neighbors and the nations joined with them in the collective defense of their freedom." And there is one further "Whereas" that the United States disclaims any "territorial, military or political ambitions in that area, but desires only that these peoples should be left in peace to work out their own destinies in their own way."

The body of the Resolution says that the Congress supports the Commander-in-Chief not only "to take all necessary measures to repel any armed attack against the forces of the United States", but also "to prevent further aggression."

The second paragraph specifies that the United States regards the maintenance of international peace and security in Southeast Asia as vital to its national interest, and cites the legal authority: "The Constitution of the United States and the Charter of the United Nations and in accordance with its obligations under the Southeast Asia Collective Defense Treaty" that the U.S. is empowered within the President's determination to take all necessary steps including

armed force "to assist any member or protocol state of the Southeast Asia Collective Defense Treaty requesting assistance in defense of its freedom."

The third paragraph has to do with the expiration date of the powers granted by the Resolution. Those powers "shall expire when the President shall determine that the peace and security of the area is reasonably assured by international conditions created by the action of the United Nations or otherwise." But there is an exit clause for the Congress, "it may be terminated earlier by concurrent resolution of the Congress."

Empowered by this Resolution, President Johnson was free to commit increments of conventional infantry divisions, Air Force units and supporting elements at his discretion. In September of 1964 the first contractor-building chore was undertaken to house an American unit which would support American, not just Vietnamese forces.

This project was a Radio Research Unit under the command of the Army Security Agency (ASA)—an electronic intelligence unit designed to gather information about enemy movements. The key equipment of this Army Radio Research Unit was a collection of secret "black boxes", and they were to be installed in new buildings in Hue. The building job would be carried out by Raymond-Morrison-Knudsen.

The preliminary plan provided for transporting the electronic equipment in a string of trailers from Tan My, a fishing town 30 kilometers east of Hue. Of course, there was no deep water port in Tan My, or elsewhere in Vietnam except for Saigon, and the small pier at Cam Ranh. So the original plan was to bring the trailers to Tan My in LSTs and beach them, then tow them over the short-cut road to Hue.

That was the most direct route, but the Tan My-Hue road was about as unsatisfactory as any primitive road in Vietnam—and, in fact, it was below even that low level. The bridges were out and the road was particularly sensitive to the heavy fall and winter rain then beginning with a vehemence. Grading and drainage were minimal, as we will see shortly.

An alternative plan was to land the LSTs at the series of LST berths constructed at Da Nang. But the road to Hue was 84 kilometers instead of 30; this was old French Highway, Route 1, which

once had been the best road in Vietnam. But it had been dug up by the Viet Cong and the bridges mined and blasted out (many of them destroyed during the French operations against the Viet Minh, and before that, bombed out by Allied air raids in World War II). The longer road from Da Nang to Hue involved a tortuous mountain climb to Hai Van Pass, with a peak of 1,900 feet and murderously narrow hairpin turns. Over the Hai Van peak, the road was passable only with one-way traffic; the road was open to traffic from one direction for one group of cars, then it became one-way in the opposite direction.

Whatever the truck route for hauling the electronic gear was going to be, the buildings for housing it had to be designed for the ASA. Back in San Bruno, California, south of San Francisco and close to the San Francisco airfield, the RMK office struggled with the State-side support problem of doing the job with the usual quotient of time: "Have it done yesterday."

The RMK chief at that location had been providing support for this and all the other Vietnam projects. Larry E. King, the dynamic San Bruno chief, had the emergency job of bringing out preliminary sketches of the buildings which would be built to house this "sneaky-peepy" Army unit.

King recalled the frantic pace at which the buildings for that first American unit were constructed: "This particular job was a pet of mine because I designed it. It was a T-shaped large building with different rooms where ASA put their decoders. And the rest of it was just a messhall and barracks which we made out of trailers, because ASA wanted something that they could take with them wherever their next assignment was.

"The operations building, which was the principal one, was made of aluminum sandwich panel which was made in Miami, prefabricated there, and this was the way it went: The Army Security Agency mentioned the name of the factory in Miami who made this type of building and I called the President of the company and said, 'I want a bid tomorrow morning on a building.'

"He said: 'What kind of a building?'

"So I said: 'Get a piece of paper and a pencil. Okay, now draw a T. It's 128 feet across at the top—or whatever it was—and 84 feet this way, so much this way, etc. Now draw a corridor right down the middle of it. Now cut it up into eight equal size rooms.' Over

the phone in about 30 minutes, I dictated the plans of the building."

Similar heroic arrangements were being undertaken at the extreme west end of our Vietnam supply line, on the road between Hue and Tan My. A survey party started from Hue in a jeep, that September day in 1964, and the heavy rains of the northern rainy season had already started their merciless annual baptism.

William H. Ritchie, a young Canadian engineer for RMK, led the party. Ritchie had already served for two years on RMK building projects in Vietnam and before that, three years with RMK's predecessor, Johnson, Drake and Piper. He was married to a Vietnamese girl and was familiar with the hazards of the Hue-Tan My road in the rainy monsoon.

The others in the party were Hank Hudson, the RMK general manager from Saigon, CAPT Jack Beaver, the Navy DOICC, and Jimmy Santelli, the newly-arrived RMK construction boss who was going to be the superintendent of the Radio Research Unit job. Santelli was a veteran of many years of construction-stiff activity on other foreign MK projects, and both CAPT Beaver and Hank Hudson were familiar with the floods that come with the rainy season of Vietnam. But none was prepared for that day's exploratory experience.

Ritchie later recalled: "We'd had about 12 inches of rain the night before. The whole area was flooded. So CAPT Beaver wants to go up to Tan My to see a proposed LST landing site to bring these damned things in—these trailers. Jimmy and I had been there and we know damn well you can't get there, because it's under water.

"So Jimmy says, 'there's no way, Captain.' But the Captain says, 'I want to go see'. We start across this long causeway and pretty soon we're driving in about a foot and a half of water and it gets deeper and deeper, up to the floorboards.

"Jimmy's not saying a word, just waiting. Finally, Captain Beaver says, 'Hank, I've never seen so much water in all my life.' It was like being in a bowl, the sky and the horizon merged.

"Hank says, 'Goddamnit, Jim, back up and get out of here'."

After that experience, the DOICC was convinced that the Phu Bai to Tan My road was unworkable for transporting the RRU trailer-loads of black boxes to Hue in that season. He chose the long, tortuous route over Hai Van Pass from Da Nang, instead, and that, it developed, also proved to be fraught with difficulties which might

have seemed insuperable to mere ordinary mortals. But the contractors were like the Seabees in their inventiveness and drive.

Ritchie sums up that struggle: "The bridges weren't really strong enough to take the loads. And some of the bends in Hai Van Pass required jacking the trailers around. They couldn't make it around the curves otherwise. We brought about 120 50-foot long trailers across the Pass. When we got up there it was September, and the troops were coming in January. Actually, they moved them in in December."

After all the difficulties in manhandling the electronic equipment, trailers and building materials to the RRU site in Phu Bai, the adversity of nature—specifically, the heavy rains of the late fall and early winter months—continued to plague the building effort. The aluminum honeycomb-material scheduled for the roofing of the main building, and brought to the building site amid such fantastic difficulties, was thoroughly soaked because of the absence of covered storage.

And the RMK building forces, already beset by the usual hazards of pilferage, were much concerned about the greater hazards of Viet Cong ambushes brought against the convoys from Da Nang. The RMK boss on the site officially requested a military escort for the convoy.

On the site, the RMK workers, ranging between 250 and 350 in number, were working for the first time on a military or Seabee-type fortification job—very unusual for civilian contractors. The American and Filipino foremen on the job, wearing the usual construction boots, slacks, sport shirts and the usual shiny hardhats seen on building sites in the United States, were superintending the digging of a trench system, machinegun positions and the erection of a protective barbed wire fence. And the Vietnamese workers under their direction were wearing the usual boots, rough pants and work shirts of the American construction stiff at work erecting a building in New York, Chicago or Los Angeles.

The DOICC in Saigon, CAPT Beaver, was told that the American troops would be moving into the building earlier than expected, in December instead of January, and there was a frantic press of work to finish the building operations. The rains continued, and the weight of the waterlogged honeycomb roofing cracked the uprights in the main building. The RMK project manager took emergency measures to shore up the structure.

Eventually, an extra roof had to be fashioned above the old one. But difficulties like these were an old story to Jimmy Santelli, the RMK superintendent of the building project, and the other veteran construction men who were the foremen and overseers of the job.

Back in the headquarters of the Bureau of Yards and Docks beside the Pentagon and Arlington Cemetery on the west bank of the Potomac River in the Nation's capital, there was the usual overtime burning of the midnight oil. Also at Pearl Harbor and San Bruno, the DOICC in Saigon and the top echelon OICC in Thailand. There was as yet very little visible evidence of the huge military building boom which was to convulse our supply lines, our contractors, our military engineers, and the overseeing Navy authority, the OICC offices.

Just before the Tonkin Gulf episode, in July of 1964, the building effort was phasing down, and many jobs were ending. By that month, the strength of the Americans and the Third Country Nationals (Filipino, Canadian, European, etc.) had dropped to 130. At the same time, the Vietnamese working force had been cut to 2,400. This was the lowest it had been since RMK was first building up in 1962. It appeared that RMK's work was done and that the contract should be closed out. But the activities following the Tonkin Gulf episode raised the possibility of more construction.

At the "Head House" in BUDOCKS, RADM Corradi decided to gamble and not close out the contract. If he let the highly skilled nucleus of RMK go, it might be a dangerously long job to re-assemble it.

In September came the first sign of the new building era. Notices to Proceed (NTPs) for a total of $19 million were given to RMK. Included were the Hue-Phu Bai ASA electronic station ($3.4 million); runway, taxiway and parking overlays at Nha Trang Airbase; Army airfield facilities ($5.1 million); and cold storage and warehousing for $1.4 million. Plus a slew of smaller projects.

The Vietnamese airbase at Bien Hoa, built by RMK, was to be reopened for construction in November. And yet, the construction money was coming slowly, considering what had to be done.

With year's end, the Work In Place, the total finished construction, was $16 million, an undistinguished total because it was almost exactly the same as the two previous years of RMK's building under contract NBy-44105. The total for the three years was $49 million. But the contractor employment roll had gone up to 3,946, and his

monthly WIP (Work In Place) was up to $2.1 million.

And it was evident that the amount of American military aid, and with it construction, was going to have to be greatly increased. In October-November-December, the strength of the Viet Cong organization was increasing practically all over Vietnam, and the grip of the central government of South Vietnam grew increasingly shaky.

Especially in Tay Ninh Province, smack against the Cambodian border and the Ho Chi Minh supply trail, the enemy had managed to muster three Viet Cong battalions. They ambushed and engaged ARVN forces along Highway 1 in Tay Ninh, and inflicted very heavy casualties.

And at Bien Hoa, the enemy delivered a heavy mortar attack on the principal airbase, killed two U.S. and four Vietnamese soldiers, and wounded more than 30.

In Binh Dinh Province, the Viet Cong had mustered a strength of two regiments, and a successful and continuing offensive was mounted against the ARVN forces in that heavily populated zone along the coast 150 miles south of Da Nang. The Viet Cong managed to drive the ARVN out of the countryside and back into their fortified camps. The control of the countryside passed to the enemy; only in the capital city of Qui Nhon and a few towns did the government maintain control.

The central government in Saigon contended with rioting and protests. This time, the protests were not by the militant Buddhist groups but organized by several of the labor groups in the city. All reflected the wishes of the Viet Cong.

The government problems had seemed to stabilize briefly when the government of General Khanh gave way to civilian control. Tran Van Huong became Premier. Yet in October and November, the government was shaken by disputes between General Khanh and Prime Minister Huong. In early December, there was much speculation that another coup was imminent. On December 5th, Air Vice Marshal Nguyen Cao Ky, whose planes had saved General Khanh from a previous attempted coup, issued an ultimatum to General Khanh to support Prime Minister Huong or be removed. There followed much debate and maneuvering, and on December 20th, the High National Council was dissolved in a bloodless coup.

General Ky emerged as the dominant power behind the scenes of the new government. He remained with it until 1971, when he resigned as Vice President.

By the end of June, 1965, General Nguyen Van Thieu had become Chief of State, and Air Vice Marshal Ky was installed as Premier. That government was confirmed in power by a general election closely watched by American observers, in 1967.

The Viet Cong demonstrated increasing aggressiveness in the country districts as 1964 came to a close. On Christmas Eve, the Viet Cong ran an auto containing a 300-pound explosive charge under the second floor of the large U.S. bachelor officer's quarters close to the center of the city, the Brink Hotel. Two Americans were killed and more than 100 injured. One of the two who died was a Navy civilian, David Agnew, a former long-term employee of Yards and Docks. He had recently been transferred from the BUDOCKS rolls to the Navy's Headquarters Support Activity in Saigon.

Incidentally, the job of repairing the badly damaged Brink fell to the RMK consortium, another unusual job for a contractor who was getting accustomed to unconventional construction jobs.

On December 28th, the ARVN 21st Division in the Delta, in Ba Xuyen Province, mounted an attack on a strong Viet Cong concentration, later revealed to be three battalions strong, and routed them, killing 87. They also made the largest capture of enemy weapons in the war up to this point, including many of the new weapons being supplied to the Viet Cong by the North Vietnamese. Notable were two 75mm recoilless rifles, the portable artillery which can give an infantry squad the artillery punch of a battalion; and four 12.7mm (.50 calibre) anti-aircraft machineguns, a deadly weapon against low-flying helicopters. Of course, they were of Chinese manufacture. The engagement itself was encouraging proof that there were some able infantry divisions in the ARVN, possessed of discipline, experience and leadership.

But on the same day, the formidable Viet Cong 9th Division, two regiments strong, ambushed and virtually annihilated the crack 33rd ARVN Ranger Battalion and the 4th ARVN Marine Battalion, and seriously crippled the relieving mechanized forces.

The battles were fought near the Catholic village of Binh Gia in

the strong VC-dominated area of the Rung Sat (Killer Jungle) 35 miles to the southeast of Saigon. This was remarked upon by military leaders as the first time the enemy had remained on the battlefield and continued to fight, rather than following the usual guerrilla pattern of hit-and-run.

GEN Westmoreland commented in his REPORT ON THE WAR IN VIETNAM: "To the enemy it marked the beginning of the classic and final 'mobile' phase of the war. (Meaning the conflict of larger troop units: Regiments, Divisions and Armies.) To the South Vietnamese government, it meant the beginning of an intensive military challenge which the Vietnamese government could not meet within its own resources."

Furthermore, intelligence indicated that three regular North Vietnamese regiments, the 32nd, 95th, and 101st, had departed their bases in North Vietnam and were moving along the Ho Chi Minh Trail towards South Vietnam. And MACV estimated that infiltration of new troops for regular Viet Cong forces from North Vietnam had totaled more than 12,000, a great increase over the previous year's reinforcement.

By late 1964, a new construction program of $80 million or more was emerging. MACV (GEN Westmoreland's Military Assistance Command, Vietnam) submitted a plan to the Joint Chiefs of Staff for a new Army Logistics Command in Vietnam. Included in the proposal was a force of 2,400 Army Engineer troops to construct facilities for the Command on the stated assumption that the work was beyond the capabilities of the contractor, in the time frame required.

RADM James R. Davis, Director of BUDOCKS' Pacific Division (Pearl Harbor) and CINCPAC's advisor on Vietnam construction, stated that the contractor could expand his capability to meet these requirements.

In Washington, the BUDOCKS Chief, RADM Corradi, backed Admiral Davis' position and as a result in February of 1965, Deputy Secretary of Defense Cyrus Vance approved the establishment of the First Army Logistics Command for Vietnam without the introduction of engineer troops. He said RMK successfully met construction requirements and could expand further.

However, this decision was reversed by DOD in April of 1965 as construction requirements grew further. Thus, in effect, the resolu-

tion of the problem was to use both contractor and military engineers.

This decision to rely heavily on the civilian contractor combine for much of the big construction program which was foreseen for the near future was especially significant. This was to be the first time that a civilian construction force would be employed in an active combat zone. The Seabees were created in 1942 because it was not feasible to use contractor forces in the forward areas during World War II. There were many reasons for this, principally that a civilian worker captured carrying a weapon, could be shot as a guervilla.

Although most construction in immediate support of combat units in Vietnam was accomplished by military engineers, the RMK-BRJ forces were frequently involved in and were subject to enemy attack. This war knew no front lines and no area could be considered safe. 52 RMK-BRJ employees were killed, with 248 injured by enemy action. One employee, James Uhland Rollins, was captured in the Cho Lon sector of Saigon on February 5th, 1968, and was released with the first group of prisoners-of-war on February 12th, 1973.

We have seen how the contractor involvement grew from the initial, small workload in a non-hostile situation—now there was an urgent need, the contractor was there, ready to expand and there simply were not enough engineer units available from all services to meet the requirement. The engineers—Seabees, Army and Marine units and the Air Force Red Horse units would arrive and play their vital role; but the major work would be placed upon the contractor—notwithstanding the risk involved.

Secretary of Defense McNamara on September 2nd of 1964 required that the military departments were to "fund all construction support of U.S. forces in the Republic of Vietnam." (Previously, all Vietnam construction had been administered by the Military Assistance Program (MAP) in support of the RVN Armed Forces.) Now, each of the Services was required to make the funding arrangements for all of their building programs.

By April 1st, 1965, the DOICC staff in Saigon had increased, to 108. And the contractor's employment roll had zoomed in three months from 3,946 to 8,038. The WIP (Work In Place) had gone to $3.5 million per month. And as of April, there were six architect-

engineer firms set up in Saigon to meet the DOICC's expected design needs.

It was estimated then that the program for the first half of the Fiscal Year 1966 would be $80 million—with further and much greater, but amount not specified, growth in the second half. For less than a year, this was a staggering amount, then.

By May of 1965, a total of $85 million had been received. By the end of July, 1965, the Department of Defense was to tab foreseeable building requirements at $280 million. The OICC, BUDOCKS and RMK quickly readjusted their plans. The recasting projected a monthly Work In Place load of $15 million by January of 1966. This was equal to a year's production the first two years RMK had been active. And that figure was to be boosted to $20 million by April of '66. The BIG DEAL in building was beginning. Yet in the future, this figure was to more than double. And the number of RMK employees, projected at 18,500 for January, would have to be boosted to 21,500 by April—with the all-time peak for Vietnam, 51,044 (July 1966) as yet undreamed.

1. Observation Point (Da Nang) Port Facility—July 1966. Work involved dredging an entrance channel and turning basin to a depth of 39 feet; the bulk of the dredged material was used to fill a 45 acre tidal swamp, thereby creating a staging area for off-loaded supplies. A 2,000 sheet piling bulkhead (seawall) was built. Two jacket-type piers were to be installed. Each pier is 90′ × 600′. These piers were prefabricated at Poro Point, Philippines, by RMK-BRJ and shipped by barge to Da Nang. The abutment for a third pier, a mobile DeLong type, was also in the job.

2. Observation Point (Da Nang) Port Facility—September 1969. Complete and fully operational. Note the DeLong mobile pier on the left, and the containerization storage/staging area to the right.

3. **Saigon River Port.** Note wharf "Quay 1" in the center of the photo. This 90′ × 510′ structure, built by RMK–BRJ, was operational on 1 October 1966.

4. **Qui Nhon Harbor.** The man-made deep-draft facility at center of photo called for dredging an entrance channel and turning basin and depositing the fill on a Japanese constructed rock breakwater. The fill formed a 30-acre staging area. The T-shaped pier is composed of four joined mobile DeLong units.

5. **Tan My Port Facility.** This project included 4 LST ramps, 2 LCU ramps, a barge pier, and a 160,000 SY hardstand.

6. **Vung Tau Waterfront.** In early 1966, Vung Tau was the waiting point for vessels awaiting availability of deep-draft berthing space upstream at Saigon. The DeLong mobile pier (upper-middle of photo), subsequently built, is a 2-berth finger pier extending from an earth causeway. In the center of the photo, 3 tankers are tied up to a POL pier.

7. Bridge Cargo Facility—Da Nang East. Built by the Seabees. Principal construction features are a 1,700′ sheet pile bulkhead, 2 LST ramps, and a 300′ wooden pier.

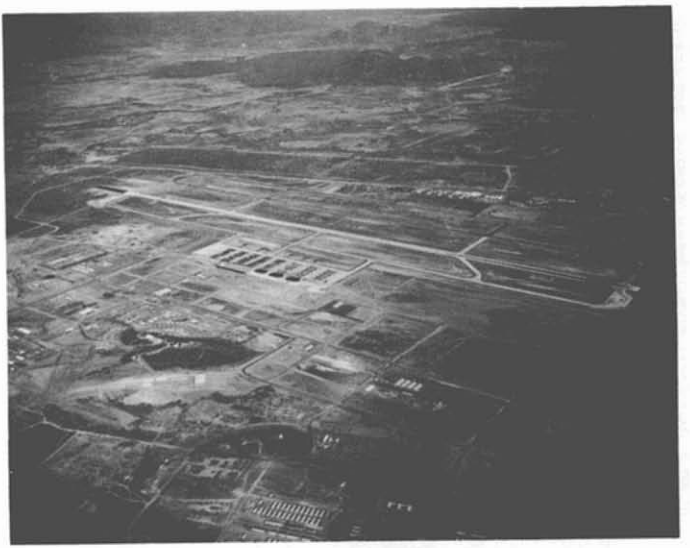
8. LST Ramp at Cua Viet. Cua Viet is a location about 6 miles from the DMZ. Urgently needed for military operations, this LST ramp had to be built under extremely hazardous dredging conditions (typhoons and heavy seas), and the prevalence of Viet Cong who were very active in the area.

9. **Tuy Hoa Airfield.** In construction, November 1966. The Air Force received special authorization from OSD to build the Tuy Hoa Airbase. The facility was built under a "Turnkey" form of contract with Walter Kidde Constructors, Inc., at a cost of $52 million.

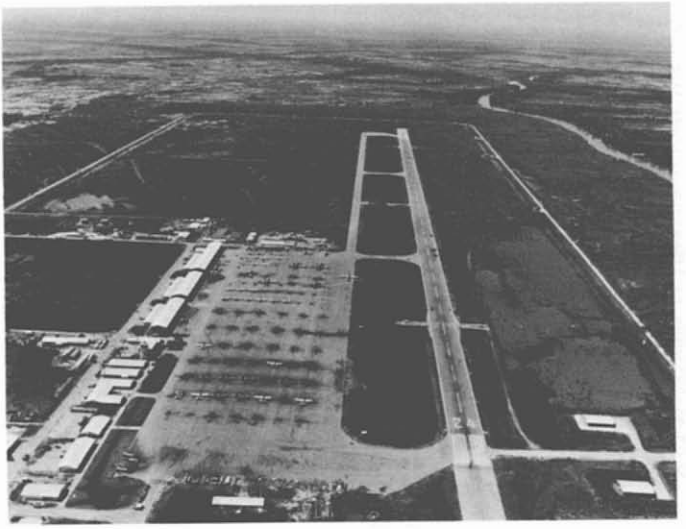
10. **Da Nang Airfield.** Located southwest of Da Nang, the second largest city in South Vietnam. An existing French-built 7,900′ runway was modernized and reconstruced into a 10,000′ jet-capable airstrip. A new 10,000′ asphaltic-concrete runway was added, with 1,000′ concrete touchdown sections at either end, 1,000′ overruns, taxiways, and warm-up aprons. Other major items were an 80,000 SY aircraft parking apron, a 48,000 SY helicopter parking apron, and ancillary maintenance and support facilities.

11. **Tan Son Nhut Airfield.** Located at the northern edge of Saigon. This 3,500-acre base was originally built by the French Army. A 10,000′ concrete runway with connecting taxiway and warm-up apron were added. Tan Son Nhut was jointly used by commercial airlines and military aircraft of South Vietnam and the United States. At its peak, Tan Son Nhut had more daily takeoffs and landings than any other airfield in the world.

12. **Bien Hoa Airfield.** Located about 15 miles northeast of Saigon. Bien Hoa was the only military airfield in Vietnam prior to 1965. A 10,000′ concrete runway and taxiway was built by RMK in 1963. A parallel 10,000′ concrete runway was added in 1967.

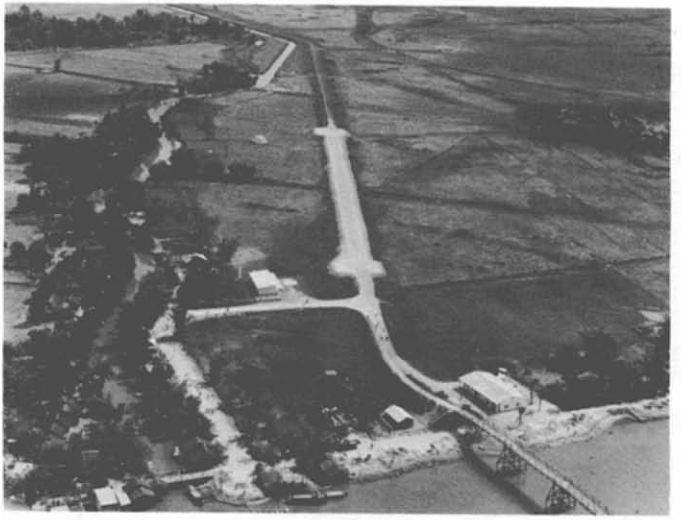


13. **Phan Rang Airfield.** An interim airfield was constructed by U.S. Army Engineers, including AM-2 1,000′ runway and taxiway, and a 71,000 SY parking apron. RMK-BRJ subsequently built a permanent parallel 10,000′ concrete runway and taxiway, completed in October 1966, and a 190,000 SY parking apron, completed in March 1967.



14. **Binh Thuy Airfield.** Located about 100 miles southwest of Saigon. This is a 6,000′ asphaltic-concrete runway; it was built in August-October 1964. The asphaltic-concrete parking apron is 165,000 SY.

15. Marble Mountain Air Facility (MMAF)—Da Nang. This was a light plane and helicopter airfield. The original runway was 2,000 feet, built of Pierced Steel Plank (PSP). The PSP was subsequently replaced with an asphaltic-concrete wearing surface. The parking aprons were of PSP and measured 135,000 and 45,000 SY each.



16. Nui Sap Airstrip. Located at An Giang, about 80 miles southwest of Saigon. This airstrip was literally only a widening of the road. It served the adjacent Nui Sap Quarry, which provided crushed rock for the entire Mekong Delta Region.

17. **Newport (Saigon)—Early View.** A rice paddy, two miles north of Saigon, was selected for a "new port" to alleviate the jam-up of freighters waiting to unload—some, as long as 30–40 days. The pile driver barge in the photo is in the process of driving 1,144 piles to form the shallow-draft section of the port. Some 500 of these piles had to be driven an average of 135 feet.

18. **Newport (Saigon)—In Construction.** Since the Saigon River bottom was silt, dredged fill from the river could not be used and fill had to be brought in from other areas. Sand was brought in at the rate of 7,000 cubic meters a day; and, unbelievably, about 3,000 cubic meters of this was delivered by sampans.

19. Newport (Saigon)—Completed. The 100-acre Newport project required 2,000,000 CY of fill. It took a total of 4,050 steel piles (a combined length of 107 miles); 35 miles of structural steel was used. The 760,000 SF staging deck required a pour of 18,000 CY of concrete. Total construction time was 15 months. Newport can accommodate, simultaneously, 4 ocean-going vessels, 2 fleet-size LSTs, 7 barges, and 2 LCMs. The estimated cargo handling capability is 150,000 tons per month. Newport was "turned over" to the Army First Logistical Command on 10 July 1967.

20. Newport (Saigon)—Close-up View. This is the deep-draft concrete wharf. The 4 berths have a combined length of 2,400 feet; the 8 transit sheds have a total floor space of 192,000 SF.

21. Cam Ranh Airfield—Site Preparation. Photograph shows the prevalent sandy character of the Cam Ranh peninsula. The site is being prepared for a 10,000′ expeditionary runway and taxiway. A critical factor during construction was the attainment of sand compaction to successfully support the runway/taxiway and to be able to withstand the repeated aircraft landings. Based on extensive tests, the critical problem was resolved by flooding the area for 24 hours and then compacting with a vibrator compactor.

22. Cam Ranh Airfield—Completed. The 17-mile Cam Ranh Peninsula is characterized by rolling sand dunes. The original 10,000′ interim (expeditionary) runway/taxiway was constructed of AM-2 (aluminum matting), shown in the left half of the airfield in the photo. A parallel permanent 10,000′ concrete runway/taxiway was then added to complete the basic airfield.

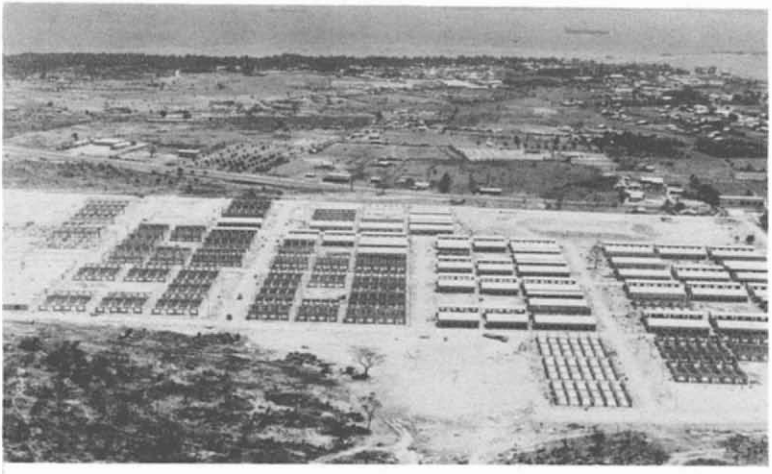
23. DeLong Pier—Cam Ranh Bay. The U.S. Army had procurement responsibility for the DeLong prefabricated pier—an "advanced base" type of pier—shown here in process of installation. The OICC/Contractor assisted in preparing sites for such installations—building bulkheads; providing dregde fill for causeways; supplying equipment and personnel as needed. DeLong piers were also installed at Da Nang and Qui Nhon.

24. Cam Ranh Bay Port Facility. A deep-draft pier of steel-pile construction, 400′ long by 45′ wide, was built in 1963 by RMK. Between 1965 and 1967, the Cam Ranh Port evolved into the extensive facility shown in the photo. By May 1967, the Port could handle, simultaneously, 8 deep-draft cargo vessels, plus one POL tanker. Army troop units installed the sheet-pile bulkheads and stabilized the contractor-dredged fill for use as staging areas. Three of the piers are of the DeLong type.

25. Ammo Pier at Cam Ranh Bay. Photo shows construction completed on the 3,600′ earth causway. Installation is underway to form a DeLong deep-draft ammunition pier that will measure 450′ long by 120′ wide. The new facility will be capable of simultaneously handling two C-3 class freighters at its 2 berths.

26. MARKET TIME Facility—Cam Ranh Complex. "Market Time" is a coastal patrol operation. There were 6 such installations along the South Vietnam coastline, all relatively self-sufficient. They consisted basically of repair and maintenance shops, floating drydocks, pontoon piers, crane pads, POL storage, utilities, and roads. This is the Market Time site at Cam Ranh Bay.

27. U.S. Army Ammo Supply Point at Cam Ranh Complex. The problem of construction in a sand dune environment is obvious here. Both the open and revetted hardstands measure 50′ × 128′ × 8′. The revetments go around 3 sides and are 12′ high.



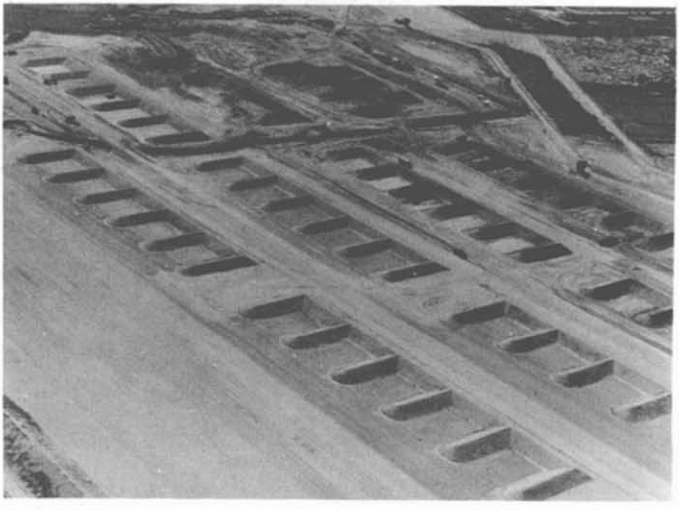
28. USAID Housing at Cam Ranh Complex. Construction of Community Housing at Cam Ranh Bay for Vietnamese tenants. Included in the Project were an Administrative Building, Fire Station, Elementary School, and Market Building; also, sewage collection and treatment, water supply and distribution, and power distribution.

Photograph by Richard Tregaskis

29. Dredging Operation at My Tho. Scope of the work was to reclaim 600 acres of land by hydraulic filling, and to dredge an LST and LCM turning basin at Dong Tam—about 4 miles west of the city of My Tho. A grand total of 7.3 million cubic yards was pumped by the following dredges: CHO GAO: 2.3 million CY; JAMAICA BAY: 2.3 million CY; HYUN DAI HO: 1.2 million CY; and the NEW JERSEY: 1.5 million CY.

30. Dong Tam Port Facilities. This is a man-made port. It provided an LST turning basin and mooring ramp, a small boat turning basin and docking berths, and a repair basin. The dredged material served to reclaim 600 acres of land to form the built-up area surrounding the port.

31. Ammo Storage Facility at Long Binh. These massive earth-covered concrete and steel Stradley ammunition bunkers were among the final projects completed by RMK-BRJ.



32. USAF Ammo Storage Area at Da Nang Air Base. Earth revetments in process of construction; a segment of the USAF Ammo Storage Facility, adjacent to the airfield, Da Nang Air Base.

CHAPTER SEVEN

Wind Up for the Pitch—Marines First, Naturally

A top-secret plan was prepared for a major operation by the U.S. Seventh Fleet Amphibious Force to land a brigade from the Third Marine Division at a beach 50 miles south of Da Nang. There were only a few fishing villages in the vicinity. One was Tam Ky, about ten miles to the north of future Chu Lai on the road to Da Nang. The surrounding terrain was heavily infested with Viet Cong guerrillas, VC cadre untis, propaganda teams, tax collectors and the whole infra-structure of the VC, now officially known among the enemy as "NLF", the National Liberation Front.

The landing was to be made on the shore of a lovely sweep of bay called Dung Quat, meaning Big Wave, literally, "Bang! Whip." This shore was to be the site of one of our great new bases in Vietnam, Chu Lai. That, legend has it, was a transmogrification into Vietnamese from the Chinese characters for the name Krulak. LTG Victor H. Krulak at that time was the boss at Hawaii for all the Marines of the Southeast Asia area and the Pacific. (CGFMFPAC, for Commanding General, Fleet Marine Force, Pacific.)

It was evident that the Marine Expeditionary Force would have to be landed by ship, because the roads to the Dung Quat area were impassable. In addition, thick VC concentrations controlled the road to Da Nang to the north and the roads to the south headed towards Quang Ngai, a town held by the Vietnamese government, but surrounded to the west and south by a heavy infestation of Viet Cong. Binh Dinh, the next province south, was the "Cockpit and birthplace of the Viet Cong" according to Ho Chi Minh.

It was the objective of the landing to plant a base in the middle of this hostile area and work from it to pacify the surrounding terri-

tory, but the location meant that resupply would have to be by sea, with air to be called upon in emergency.

And there was no airfield in the area. The Marine Expeditionary Force, following the doctrine worked out in the Korean war and in subsequent maneuvers, was to work as a unit. Air and other supporting arms of the rifle companies would be working as a coordinated team during offensive sweeps and engagements.

So the plan was to send a Seabee battalion in with the initial landing force, with the mission of constructing an emergency field which fighters and attack planes could use. Thus, the 3,000 Marines of the Fourth Regimental Landing Team would have air protection not only for ordinary sweeps and operations, but also in the event of a major engagement with one of the rapidly building forces of Viet Cong in the vicinity.

The main job of the Seabees at Chu Lai was to build an 8,000 foot runway, to be surfaced with AM-2 (aluminum) matting. So that the field could be very rapidly operational, the builders would install the latest wrinkle contrived by Marine amphibious researchers: a MOREST (mobile arresting gear) mechanism modeled after those aboard an aircraft carrier, to make it possible to make safe landings in high speed fighter and attack planes with a landing run of less than 600 feet. Of course, for takeoff even a lightly laden A3D would require 3,000 feet of runway at a minimum, unless catapults or JATO pods were added (JATO standing for Jet Assisted Takeoff, a system using short-lived boosters added to wings or fuselage to provide a blast of extra thrust).

The fully developed amphibious landing field called SATS (Short Airfield for Tactical Support) was a Marine development broken into four spheres: matted runways, visual aids (a system of signalling to the landing aircraft's arresting gear) and a steam catapult like those on carriers, for very short takeoffs. The Seabees initially built the first three of these at Chu Lai.

At the same time Marine Headquarters was planning the landing of the Third Marine Amphibious Force at Chu Lai, they also laid on a plan to send the remaining part of the regimental forces of the Third Marine Division to Da Nang to provide security for the Da Nang Airfield.

This smaller force was actually the first element of a Marine division to reach Vietnam: March 8th, 1965. They could be de-

ployed more rapidly since Da Nang was a relatively secure area compared to Dung Quat Bay.

The Marine Amphibious Force landing at Chu Lai was scheduled for early May. Embarked with the ships carrying the Third Marine Amphibious Force was Amphibious Construction Battalion One. PHIBCB-1 was a distinguished battalion with a wide experience in amphibious operations, including the Korean war. They had sent a detachment to Da Nang in April, 1964, to assist in commissioning a 200-ton drydock for small Navy patrol boats being turned over to the Vietnamese Navy. For the Chu Lai deployment, the PHIBCB-1 element had started from their station in Yokosuka, Japan.

Under LCDR R. T. Field, the detachment was equipped with standard steel pontoons, the "Magic Box" which the Seabees had used with such tremendous effect in the amphibious landings of Europe in World War II. These "Magic Boxes", in the allied landings from Sicily on, when used with self-tightening, interlocking bolts and straps, were the secret of the "instant piers", averaging about 200 or more feet long. These made it possible for our landing forces to roll vast quantities of the equipment of modern war ashore at the most primitive beach scene.

The "Magic Box" is five by five by seven feet and weighs 2,600 pounds. It was originally conceived for bridging rivers. A Navy Civil Engineer Corps Captain in World War II, John N. Laycock, devised the system of attaching the pontoons into sections, two pontoons (14 feet) wide and extended as far as structural rigidity would allow. When this point of weakness was reached, CAPT Laycock had devised what he called the "slide rule" solution, with overlapping lines of causeways so that most of the pier was two pontoons wide.

During the Sicilian, Italian, Southern France and Normandy Beachhead operations these "slide rule" piers were made with two 175-foot sections fastened together side by side to a variable length of more than 200 feet, depending on the load they would be carrying. These "instant piers" were towed alongside LSTs heading for the beach in amphibious assaults at Gela, Licada and Salerno, and when the LSTs went aground, the shallower draft pontoons would ride their momentum until they struck bottom.

This ingenious trick of engineering imagination enabled the assaulting forces to get their supporting artillery and tanks, and

their supply trains ashore in short order, and without them these beachhead assaults would probably not have succeeded.

At the Normandy Beachhead the "instant piers" were developed into a larger version called the "Rhino Ferry." The Rhinos were developed by CAPT Laycock and a British Naval officer, CAPT T. A. Hussey. They were large, 30 pontoons long and six wide, so that they could carry half of the cargo of an LST; and they had their own source of power, two long-shafted, giant outboard motors at the stern of each Rhino Ferry. But the principle was the same: to transfer cargo from the relatively deep-drafted LST to shallower water in a moving instant pier. The problem of transfer to the beach was especially aggravated along the Channel coast with its 18-foot tides and long and wide shelving bottom.

In the case of the landing at Chu Lai, the Marine and Seabee leaders estimated that at least the Seabees of PHIBCB–1 would not be under heavy fire on the beach as they worked. The Seabees had suffered their share of casualties in the Sicilian, Italian, Southern France, Normandy and the succeeding series of instant pier operations that were carried out in almost all of the Pacific island assaults—and also at the Inchon Landing in Korea. At Inchon, incidentally, the pontoon causeway structure was launched and maintained by this same Seabee outfit, PHIBCB–1.

The Seabees scheduled to do the work of building the Chu Lai Airfield were NMCB–10, well into a deployment in Okinawa when they were ordered to Vietnam.

NMCB–10 had been the Alert Battalion, ready to move to any trouble spot on short notice. They carried on frequent "mount-out" practice in emergency embarkation by both ship and air. The Battalion had been used for quick projects, rough construction jobs from which they could be removed on short notice.

* * * * *

The rank and file of NMCB–10, on Okinawa, however, had no inkling until April that they were to be committed to Vietnam.

Meanwhile, the operations officer, LT Frank M. Newcomb, had flown to Da Nang to get as much information as he could about the deployment site at Dung Quat Bay, the secret landing zone.

There was little logistic support for wandering Seabees in those days in Vietnam, and Newcomb, in the chaotic scene of embryonic *big troop operations, had no way to get to the* Chu Lai vicinity. He managed to promote a helicopter ride from the Marines, the special friends of the Seabees, and with map in hand, he asked his Marine friends to fly him to what appeared to be the "X-Zone" for landing. He found, as he had anticipated, a roasting hot beach desert with the sparsest of vegetation, and he jumped out of the chopper and took a sample of the sand. Then he had the helicopter *fly him to the nearest high ground* where he wanted to check a rocky outcrop for use as a possible quarry pit.

But the helicopter pilot and crewman warned him to hurry, because this was very definitely "Charlie Country" and they were obviously jumpy.

He hurried to an outcrop he had spotted, and almost immediately he heard the crack of gunfire above the noise of the whirring rotor blades of the idling H-34 which waited for him. He abandoned the search for rocks and began to run back towards the chopper. But he heard the engine and blades revving up as the nervous pilot prepared to shove off without delay. Then he broke all known field records for the 100-yard dash getting back to the aircraft.

The chopper pilot held on till he could get aboard, then whisked away towards Da Nang. And that, in the press of time and the confusion of modern warfare, was to constitute the extent of on-the-scene research into the quality of the soil and rock resources in the Chu Lai vicinity. Once back in Da Nang, Newcomb couldn't promote another flight to the nervous Chu Lai area, and he had to return to his base on Okinawa to finish his preparations for the upcoming amphibious landing.

The story of that Chu Lai landing, and the tremendous natural and enemy-made obstacles to it we will reach in a very short while. But meanwhile, we must follow other developments in the Big Buildup of our military strength in Vietnam, and at the same time, the growing strength and aggressiveness of the enemy which had led to our larger committment of military aid.

The enemy, now considerably reinforced by North Vietnamese

Army troops, was growing increasingly offensive. The first NVA regiment to enter South Vietnam, the 95th, arrived in the Kontum area in late December of 1964 and was joined in January and February of '65 by two more NVA regiments, the 32nd and 101st. The Kontum NVA troops intruding into this central plateau area of South Vietnam at the area where Laos has its southern border with Cambodia, had travelled by the series of backwoods paths from North Vietnam through Laos, (the Ho Chi Minh Trail).

Farther north, the NVA 6th Regiment had infiltrated across the border area between North and South Vietnam, the Ben Hai River; MACV intelligence estimated that the infiltration rate from the North was more than a thousand men a month. And the Viet Cong forces all over the country were now equipped with the 12.7mm (about .50 calibre) anti-aircraft machinegun.

In January, the battle of Binh Gia and the defeat of the ARVN there indicated that the Army of South Vietnam desperately needed air support, and that the VNAF was not capable of sufficient support. This was the view of General Westmoreland, and he requested authority to use U.S. jet aircraft against the enemy in support of Vietnamese troops under emergency conditions. This authorization was granted, with the proviso that COMUSMACV (Commander U.S. Military Assistance Command Vietnam) would make the decisions about employing these aircraft on a case-by-case basis.

In mid-February, a concentration of Viet Cong, believed to be regimental in strength, was located in the jungles of Phuoc Tuy Province, not far from the scene of the fighting around Binh Gia in January. On February 19th, 1965, after a clearance by South Vietnamese officials, 24 U.S. B-57 "Canberra" bombers struck this target, the first bombing raid by land-based jets in the Vietnam war. Of course, jet fighters and attack bombers from our aircraft carriers had struck North Vietnam when the larger war began, starting in August, 1964.

On February 24th, 1965, a fierce action was joined by the Viet Cong on Route 19, the lateral highway running east to west between Pleiku and An Khe, as the Viet Cong ambushed a company of Vietnamese Rangers and a company of CIDG (Civilian Irregular Defense Group) troops with a U.S. Army Green Beret team at the

notoriously exposed Mang Yang Pass. It was this same pass where the Viet Cong had destroyed the French "Centurions", or Group Mobile 100, in 1954.

To lift the pressure of that Mang Yang attack, General Westmoreland dispatched 24 F–100s and B–57s, this time with "Huey" gunships to assist for close attacks. Other Hueys, the troop-carrying variety, extracted the beleaguered force without the loss of a man. This exercise of quick air support, coupled with helicopter-borne troop reinforcement, was apparently the proper treatment for an enemy emboldened into believing that he had reached the phase of the war where guerrilla bands of company and battalion size graduated to larger scale conflicts with regiments, divisions, and armies.

By the end of May, 1965, U.S. forces in South Vietnam had more than doubled since December 31st. As of the end of May, there were more than 50,000 troops: 22,000 Army; 16,000 Marine Corps; 10,000 Air Force; and 3,000 Navy.

With these increases in the numbers of American fighting men, each Service was clamoring for an expansion of base facilities in Vietnam. There was a crying need for housing, service facilities, storage space, airfields, all the rest of the cumbersome (and expensive) support machinery. The building effort was clicked up several cogs at the Washington Headquarters offices.

Edward J. "Big Ed" Sheridan, fully-titled Deputy Assistant Secretary of Defense for Properties and Installations (DASD–P & I), was busily making plans with RADM Peter Corradi, Chief of BUDOCKS, and his dynamic Deputy, RADM A. C. Husband.

Imposing, white-haired, shrewd in the ways of politics and Washington, Sheridan tackled the central question of planning and funding when little more than general directions were apparent for Vietnam.

The planning, programming and funding process was a tangled skein to end all tangled skeins. The specific building projects were generated in Vietnam by the separate Services, passed up the chain of command to the top, through MACV, CINCPAC, the Service headquarters, to OSD. The approved projects were carried by the engineering representatives of Army, Navy and Air Force to the Saigon DOICC office for design and construction.

In April 1965, RADM J. R. Davis, the Director of the BUDOCKS Pacific Division, visited Thailand and Vietnam to review the effectiveness of the ongoing design and construction program and to appraise the capability of the OICC and DOICC to prosecute a greater workload. Since he also served as Commander, Construction Battalions Pacific Fleet, he was also most interested in the engineering intelligence available about the Chu Lai area, for he knew that NMCB-10 would land there in about a month.

RADM Davis found that the concept of directing the Vietnam construction program from Bangkok was being strained by the current level of operations and probably would be cumbersome with a greatly expanded effort.

As construction requirements became more urgent, and as the size of the program grew, communications among the OICC, the DOICC, the service agencies and the architect-engineers became more difficult and there was a restiveness among the Vietnam customers. Because they could not easily talk to the OICC program management and design staffs, they were uneasy and concerned over the responsiveness of the OICC organization. In a very large program, a more effective communications system would clearly be needed.

The conditions which had indicated the wisdom of retaining the OICC authority in Bangkok were in the process of change. In the early days of the Vietnam construction, the volume of work was not sufficiently large to justify the overhead of a full OICC staff. But even as the volume increased in late 1964 and early 1965, one other condition dictated that Saigon should still operate under the control of Bangkok—the vast majority of the architect-engineer capability was in Bangkok and economy and effectiveness both dictated that the OICC engineering group be physically located close to the design contractors. To this point, there had not been sufficient design workload in Vietnam to warrant many of these private firms maintaining offices in Saigon, in particular, considering the possible risks to their U.S. personnel. As the scope of construction grew, however, the architect-engineer strength in Saigon did grow, and the several conditions justifying an independent OICC existed. Accordingly, RADM Davis recommended this action to RADM Corradi, Chief of BUDOCKS, and OICC RVN was created on 1 July 1965 with CAPT M. E. Scanlan as the first OICC. OICC Southeast Asia became OICC Thailand.

We will see later in this account how this process was reversed in late 1972, with OICC Thailand once again assuming the responsibility for construction in Vietnam upon the disestablishment of OICC RVN and the completion of the RMK-BRJ contract.

* * * * *

The war was heating up. Until more massive American forces could reach Vietnam and be deployed, the Army Special Forces carried the burden of the fighting involving Americans, and in June, a Special Forces team and an accompanying Seabee Team were involved at Dong Xoai, on the Cambodian border, in a battle to the death with a massive force of Viet Cong 9th Division troops.

At Chu Lai, the Seabees of NMCB–10 were heavily engaged not only with enemy harrassment, but also with a fearsome battle against the forces of nature which was to demand every bit of their ingenuity and their capacity for hard work. In the next chapter, we will tell the story of NMCB–10's epic effort.

CHAPTER EIGHT

The Chu Lai Amphibious Landing—Seabees Included

The hot, summer dry season of the northern part of South Vietnam was in full oven-blast that day on May 7th, 1965, when LCDR Robert T. Field went ashore with the third wave of the Third Marine Expeditionary Brigade.

Commanding that force was BG Marion E. Carl, one of the Marine Corps' most famous fliers. He had been one of the first fighter aces to emerge from the bloody battles at Guadalcanal, and was active in the fighting through WW II and Korea. He had come to Okinawa in March.

Again, Carl was in the forefront. He was on hand that first day to place stakes marking the runway in Chu Lai's expanse of sand.

Field was leading a detachment of PHIBCB–1 with two eight-pontoon causeway piers which were to prove invaluable in supplying that division-strength operation. After that struggle was over and the base was built, MAJ GEN A. B. Collins, USMC, who commanded the Third Marine Division, labelled this pier "the one single function that made the entire operation possible."

That causeway, the main link for the Division with the outside world and the supply train, was to be preserved through heroic emergency measures when the season of winter storms began. Three times the heavy surf of the stormy season broke it loose, and into pieces.

GEN Lewis W. Walt was then the commander of this Third Marine Amphibious Force, of all U.S. forces in the I Corps (northernmost zone of South Vietnam), (and later, Assistant Commandant of the Marine Corps). Known as "the Marine's Marine", with ice-blue eyes, a constitution and nerve to match his long battle

record, he had high praise for that causeway pier and the night-and-day emergency repair work which kept it functioning. GEN Walt said: "It was a lifesaver for us. It was the only way we could get our heavy equipment in there when the Seventh Marines (Regiment) came in there.

"It was that pontoon that allowed us to get our forces unloaded so we could get into the Batangan operation."

The Batangan Peninsula operation, south of Dung Quat Bay and the base at Chu Lai, was the scene of the first large-scale battle between U.S. forces and the Viet Cong. In that Operation Starlight, the Seventh Marine Regiment under the command of COL O. F. Peatross, surrounded the Viet Cong Second Regiment on the Batangan Peninsula in a close, bitter fight, some of it hand-to-hand. The Marines killed 700 of the entrapped force. This battle, in August, was also the first aggressive move against the strong Viet Cong forces in the Chu Lai vicinity.

GEN Walt added that the pontoon piers were difficult to maintain "because of the flat beach, and heavy wave action, and they (the Seabees) were limited on the material they had to work with. They had to use a lot of ingenuity and initiative as they always did. . . . Some people said that the pontoon couldn't be put in. It was put in and it operated and we used it. We used that pontoon until we were able to establish an LST landing ramp in an inlet north of that. . . . Furthermore, we could not have gotten that airfield built if it hadn't been for that pontoon pier."

At one point, GEN Walt recalls, the pier, broken loose in heavy weather, was reanchored by the use of two immobilized tanks as a kind of sea mooring.

The primary mission of NMCB–10 in this deployment was to build the emergency fighter field, the sand to be used as a base material and the 8,000 foot runway to be built of AM–2 aluminum matting, each plank 12 by two feet, and weighing 144 pounds. This was a newly developed building material. The planks were smooth-surfaced and interlocking. The beautiful beach sand was so intractable during early moments at the site—and there were no roads—that often only tracked vehicles were workable. But, fortunately, the rains were several months off, and enemy opposition was limited.

The construction method was laborious, but that degree of labor

was unavoidable. The large dunes of the Chu Lai beaches had to be moved, compacted, and stabilized to hold the weight of aircraft. This job was the first use of AM-2 matting in Vietnam, and it was also the first SATS (again, Short Airfield for Tactical Support) to be built.

The Seabees worked around the clock to get the runway up to a workable landing-takeoff 4,000 feet. Four thousand feet was okay as long as JATO (Jet Assisted Take-Off) pods were used on the planes. The Seabees finished that stint in 23 days from the start of their job, on May 30th, 1965.

GEN Krulak, the Marine Commander for the Pacific, had a bet on that issue—a case of whiskey—with MAJ GEN Richard G. Stilwell, that a Marine squadron would be operational before a month. Of that, more later.

To get finished, the "Men of Ten" many times had to improvise with the famed "Can Do" kind of inventiveness. Surveyors on the night crew had to find a way to survey accurately at night. The Seabee solution: One Seabee held a flashlight on an angle into the transit, and the other spotted on the surveyor's rod.

And when the mat-laying crew found that they needed sheet metal to cover the joints where the runway and the cross taxi-ways met, and there was no sheet metal available, the Seabees used end-plates from the packing cases.

The job site was a long way from secure, and the equipment operators were constantly protected by armed Seabees and Marines who rode "shotgun" on the earth-movers. Other Seabees guarded the airfield and the base camp they were building for NMCB-10. Marines manned the outer defense perimeter.

On June 1st, the first fighter to board the embryo airfield and its runway came screaming out of the sky, and was jerked to a halt in a little more than 300 feet by the mobile arresting gear cable (MOREST). Marine COL John D. Noble, CO of Marine Air Group 12, thus became the first flier to land a fixed-wing aircraft on the new airfield.

Later that day, seven other pilots and their planes, representing the advance party of squadron VMA 225 arrived.

At 1300 that day, the first combat mission was launched (using JATO, of course) from the runway. Leading the formation was LT COL Robert W. Baker, CO of Attack Squadron 225.

There was reserved jubilation among the Seabees: there was still half of the runway to be built. And squadron VMA 225 was not truly operational from the field, only half of a squadron.

So GEN Krulak paid his bet—only a half of a squadron was operational.

One month later, the 8,000 foot runway was completed, including a parallel taxiway of the same length, and more than a thousand MOREST landings had been made.

But the completion of the full runway and taxiway was only the beginning of the Seabee effort. In the following months, they built a large heliport, consisting of two 600 by 900 foot helicopter pads, 12 miles of all-weather roads, a quarry area with rock crusher capable of producing 200 tons an hour, and more than 900 strongback tents for Marine and Seabee headquarters and living quarters.

Eventually, the Seabees were to build an LST ramp in the Truong Ghiang River, but in the meantime, the original pontoon structure of PHIBCB–1 served its unique purpose, and was kept functioning by heroic measures.

So that they could work around the clock, aside from their use of flashlights to illuminate transits and rods, the Seabees needed larger, general illumination. In the early stages, they hadn't been able to get the floodlights and spotlights they needed for the night work ashore, so as a temporary expedient, they used jeep headlights. In terms of economical expenditure of money to produce light, the method was not efficient. But in the absence of floodlights and generators, relays of jeep headlights did the trick. It was the kind of rough improvisation under the most primitive conditions which the Seabees do so well.

Until the planes began to land on the runway, the runway and taxiway progressed with startling speed. The heat and glare in that sandy desert, and the beautiful, white, fine sand in which they had to work posed a constant maintenance problem, with sand in the gears of every piece of equipment every day, all day.

But the Seabees were used to this kind of obstacle. At Port Hueneme, at Davisville, and at the recently reopened training camp at Gulfport, Mississippi, they were accustomed to working in sand, and in California, much of the time in hot sun. They stripped off their shirts, and there were still among them Seabees with wide experience in making machines go whatever the natural obstacles, and despite the 24-hour work day.

But there was a fresh and central problem to be overcome, as the Seabees and the Marine combat engineers who assisted them rapidly found out. As soon as the Seabees had fashioned the runway long enough so that planes could take off and land, a disturbing phenomenon occurred. After a few landings, a sizeable rent or hole developed in the smooth grey surface provided by the AM-2 matting. Sometimes, there were several holes, scattered down the runway, appearing with the suddenness of a pox.

As the Seabees rushed to finish the work on the runway and taxiway, they had to backtrack to solve the emergency problem.

The problem was deep-seated. The immediate break or fault in the AM–2 always seemed to arrive when the ocean of shifting, loose sand below had moved.

The Seabees had to re-work the whole first (northern) half of the runway, while the southern half was used for tactical operations. Then they had to do the same with the other. And when the heavy rains began with the northern winter monsoon in October, the whole job had to be done again.

At first, the sand under the laterite sub-base had been simply wet and compacted. Later, the sand was "shot" with a light layer of asphalt. And finally, a thin plastic membrane was laid immediately under the AM-2 matting to keep the rain from settling into the subsoil.

The building program took on added urgency as intelligence reports reaching GEN Walt's headquarters indicated that the enemy, the First VC Regiment, were amassing strength in the vicinity of the Batangan Peninsula. Intelligence also discovered that they were planning to attack Chu Lai in force on the 20th of August. The objective was to join battle with the Marines and obliterate them by taking them in surprise, and staying with the battle until their enemy was annihilated. The Viet Minh had achieved a number of such successes already noted in this book, the most complete victory being that at Dien Bien Phu.

So it was an absolute first priority that the airfield at Chu Lai should be functioning. Also, that ample fighter-bomber cover, plus the fleet of helicopters needed for the campaign, should be instantly available.

GEN Walt made his plans in the usual detail, and with a bold overall concept. He would land one battalion over the beach, in the classic amphibious fashion, near the enemy Batangan strongpoints,

then another battalion would be moved inland to push the enemy towards Batangan. Another part of the regiment would come overland from Chu Lai. If it worked as planned, it would be a perfect Cannae encirclement. And annihilation for the VC.

And, in general, it worked that way. Some unforseen problems came up and had to be met with the usual Marine improvisation. But the overall plan of cutting off the retreat of the enemy by land, and driving him deeper into Batangan, was carried out, and evidently it was a complete surprise to the cocky and aggressive enemy. The Second Viet Cong Regiment were local heroes, and they had never been beaten before.

GEN Westmoreland recalled: "This battle proved beyond any doubt what the Marines had been sure of all along—that they could meet and defeat any Viet Cong or North Vietnamese force they might encounter." The Marines, almost all untried in battle to this point, chalked up one of the resounding victories of the whole Vietnam war. They counted more than 700 dead soldiers of the Second Regiment in the wake of that battle, August 19–20.

But the battle of building had barely been joined as the Batangan engagement ended. It wasn't until the rainy season came, with heavy winds, rain and mountainous surf, that the Seabees began to have trouble which seemed insuperable.

The pontoon pier, anchored securely to withstand the summer variety of weather, could not take the beating of the northeast storms. Under the lashing of the storms, not only did the causeway pier break loose, it broke into sections. It had to be pulled off the beach with a small fleet of landing craft, derricks and winches. With the big waves still rolling in, it seemed that the most effective emergency anchors would be some discarded armored amphibian-carriers, LTVs, the same kind of armored landing vehicle called an Amtrack in World War II. Several Amtracks, used in the initial landing of the Marines on the shore of Dung Quat Bay, had struck mines and were badly enough disabled so that they were no longer useful for transport.

The Seabee plan was to bring an old LTV into position on each side of the refloated causeway pier, attach them with cables, and then sink them as anchors. It was a struggle for the Seabees, even though the LTVs were badly damaged, to sink the bouyant vehicles. But once on the bottom, the heavy objects seemed to

serve well enough. But another period of storm resurgence arrived, and snapped the cables. However, somehow the Seabees managed to patch up the anchor situation and restore the "instant pier" again, almost instantly.

That feeble link with the outside supply train was kept functioning until the month of December when the Seabees could build an LST ramp at the mouth of the Truong Giang River, so that some of the heat was removed from the resupply situation.

GEN Walt summed up the Seabee history at Chu Lai: "When I got there and we started this project all these things started to happen, obstacles kept coming our way, it seemed like a mountain that we were never going to get to the top of. The only reason we got to the top of that mountain and overcame these obstacles was the character of the people we had working on them. These Seabees, they just wouldn't quit."

CHAPTER NINE

The Saga of Dong Xoai

Another group of Seabees who "wouldn't quit" in this period of buildup for the big effort was Seabee Team 1104—who won immortality in Seabee legend at Dong Xoai.

That Team, and particularly one Third Class Petty Officer Construction Mechanic (CM3) Marvin Shields, proved at Dong Xoai that they not only wouldn't quit in their building effort, but that they could also pitch in and fight better than hell when the need arose. And Marvin Shields, aged 26, rose to a new height in Seabee history. He became the first Seabee to win the highest American military decoration, the star-spangled Medal of Honor.

Dong Xoai (pronounced Dong Sway) was a boondocks village close to the Cambodian border. It was astride one of the main (Ho Chi Minh Trail) supply routes the North Vietnamese were using to support the Viet Cong. The Seabee Team was one of many working in the primitive backwoods areas to build for the embattled Green Beret, or Special Forces, A teams. The time was early June, 1965.

Seabee Team 1104, under the command of LTJG Frank A. Peterlin, had already been the target of a grenade-throwing assault at Saigon, as they arrived on their first assignment on this deployment.

The mission of Team 1104 at Dong Xoai was to build a Special Forces camp and airstrip. The two companies of CIDG at Dong Xoai were highly regarded by CAPT William M. Stokes III, U.S. Army, the commander of the Special Forces team. LTJG Peterlin also considered the CIDG companies as "excellent."

The majority of the Seabee Team arrived at Dong Xoai on June 4th, with most of their equipment, by means of eight C-123s flying in from Tay Ninh.

CE3 Richard S. Supzak and EA2 Frederick J. Alexander, Jr. had gone to Saigon that day heading for Bangkok and Rest and Recre-

ation there. The others absent the night of the attack were EO2 Jack L. Allen, and EO2 John C. Klepfer. They had remained in Tay Ninh with the heavy earth-moving equipment and 6,000 pounds of other gear which the C–123s had not yet carried in to Dong Xoai.

The members of the Team on hand that night of June 9th when the VC Ninth Division began their attack, were LTJG Peterlin; BU1 Dale B. Brakken; SW2 William C. Hoover; BU2 Douglas M. Mattick; HM2 James M. Keenan; UT2 Lawrence W. Eyman; EOC Johnny R. McCully; CM3 Marvin G. Shields; and CM1 James D. Wilson.

The attacking elements of the Viet Cong Ninth Division which hit Dong Xoai came loaded for bear: with mortars, flame throwers and ample machineguns. They rapidly overran the outer berm of the fortifications, and their well-placed first mortar rounds knocked out the main radio of the Detachment. But the shattered CIDG company and the Seabee and Special Forces Teams formed a defense nucleus around the headquarters building and the mayor's house in the village.

Very early in the fighting, in one of the first mortar onslaughts, the Special Forces commander, CAPT Stokes, was severely wounded. The Green Beret second-in-command, LT Charles O. Williams, bolstered up the defenses as much as possible. With an improvised radio link, he eventually managed to establish contact with the nearest headquarters and inform them of the attack.

The Seabees fought valiantly beside the Special Forces troopers and the CIDG soldiers, and before the bulk of the fighting had been finished the next afternoon, all but one of the Seabees had been wounded. The two most badly wounded, Marvin Shields and William C. Hoover, died before the evacuating helicopter could take them back to the hospital the next day.

It was 11:45 on the night of June 9–June 10, 1965 when the Viet Cong mortar shells began to smash into the Dong Xoai camp.

The earth shook with the impacts. The sounds reverberated through the rows of trees in the old rubber plantation to the north, in the little town to the east, and among the sandbagged barracks.

The crumping mortar shells kept on: 12, 18, 22 explosions flashing into the bivouac areas. The Viet Cong forces which surrounded this town had taken weeks to prepare for this surprise attack. American and Vietnamese troops on watch along the outer parapets braced for a Viet Cong guerrilla attack.

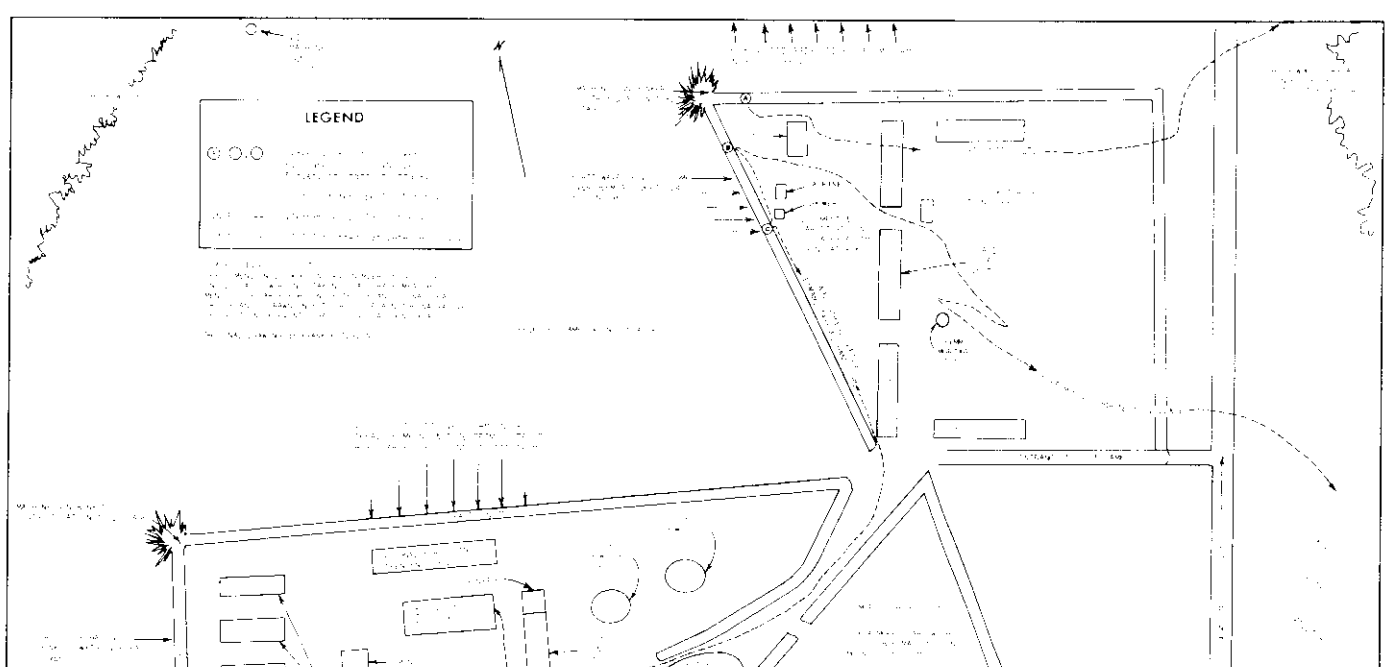


FIGURE 4

The initial Viet Cong mortar barrage had already hurt our forces. From the military buildings came agonized shouts and cries of "Medic!" and "Corpsman!" In the wreckage of two smashed barracks buildings men lay stunned and bleeding—Special Forces troopers, the combat-wise wearers of the Green Beret, and fighting Seabees.

And the VC mortars kept coming: into the landing strip, and inside the J-shaped line of defenses, probing into the camp of the 500-odd Vietnamese soldiers and 20 American Green Berets and Seabees. One of the prime targets sought and already hit by "Charlie" (the Viet Cong) in this initial attack with 60mm mortars was the camp's dispensary full of valuable medical supplies. Also, the communications shack, the camp's link with military headquarters in Saigon, 100 kilometers south. All the radio equipment in the shack was smashed.

The Americans had been expecting this kind of attack, though not one this devastating. They had practiced for it. The Green Beret commander, CAPT Stokes had decided they should reinforce the western defenses, where an attack was most likely. Some of them would go to the north part of the berm enclosure, the top of the J. Others to the southern and western bar of the J. The Vietnamese troops would take places along the whole length of the fortification.

Six Americans and scores of Vietnamese had already been wounded by the first mortar shells. But those who could walk raced to their appointed places along the berm. The picture looked black. The volume of enemy fire was very heavy: mortars, the torching of recoilless cannon, torrents of small arms rattling. Stokes estimated the assaulting force at 2,000 men, four times as many as the defenders.

One of the Americans who ran for the north berm was CM3 Marvin Shields, 26, former lumberjack from Port Townsend, Washington.

Shields' battle position was on the north berm. But one of the first rounds of the VC mortar barrage had hit the building where he was sleeping, the Command Post. In the wreckage, a fellow Seabee, Steelworker Bill Hoover of San Diego, California, had been ripped by flying fragments.

A Special Forces Medic bent to help him. Shells were still "carrumping" into the west berm, and a torrent of small arms fire

rattled and banged as Shields thudded along the trench in the dark—heading toward the vortex of flashing red tracers and orange shell bursts.

The Seabees, all except for Chief Johnny McCully, who was standing sentry duty on the north berm, had been asleep when the first VC mortar shells came smashing into the camp. LTJG Peterlin led a group of four Seabees, running at a crouch toward the camp's northernmost berm, heading for the cascading sounds of machine-guns, grinding mortar explosions hitting into that area, and the horrific flashing orange tongues of fire indicating that recoilless rifles and rocket launchers were being used.

Marvin Shields, clutching his heavy M-14 automatic rifle, followed his chief into the trenches at this whirlpool of fighting. The other Seabees here were muscular Utilitiesman Petty Officer Lawrence W. Eyman, and Chief Johnny McCully. Bill Hoover joined them. He had been patched up by the Medic—his injuries from the mortar round had proved to be minor.

It was clear immediately that a large-scale attack was being mounted. From beyond the earthen parapets, the sandbags and the coils of barbed wire which protected the position, the dark was alive with the sounds and fiery fury of an assault. The initial strike came against the upward arm of the J-shape of the camp.

And already a series of heavy blows had struck the American Special Forces detachment at the southern or lower arm. When the attack began, CAPT Stokes had dashed for the communications shack. But the shack was smashed, the radios ruined. Then, to compound misfortune, a torrent of enemy mortar shells smashed into the ground behind Stokes. He was knocked down, both legs broken and torn by fragments. Command passed to the lanky LT Williams, who had been executive officer and second-ranking man of the U.S. detachment.

At the west berm, a raggedy force of Vietnamese CIDG filled the trenches and fighting holes: reinforced now by the five Seabees and five of the Green Beret or Special Forces detachment. Our men fired furiously into the dark, aiming at whatever flashes they could see—the orange spots of muzzle blast, the long bright tongues of fire where 57mm recoilless rifles ripped the blackness. And the *incoming mortar shells blasted across the area.*

One of those hit was Shields, a mortar blast shaking the earth

around him. He was stunned with impact and the brightness of the explosion, and moments later felt warm blood on his neck and back. He knew the shock of realizing he had been wounded. But he could move his arms and shoulders. It had not been too bad. Shields resumed firing in the VC direction with his M–14.

The Seabees in this position were giving the Viet Cong what-for. As the enemy rifle and machinegun fire raged into a storm, it seemed inevitable that at any moment Charlie would launch one of his "human sea" attacks out of the dark. The fighting Seabees fired with everything they had. Sometimes our men could see dark shapes of the enemy moving against the flashes, or a movement in the heavy weeds. Charlie was moving in.

Meanwhile, in another part of the camp to the east, the acting Special Forces Commander, LT Williams, had located a small standby PRC–10 radio which was still workable. It had been patched together by the Special Forces communications expert and the communicator was at that moment sending a call for help to the military headquarters in Saigon. Headquarters promised that help would be coming.

The first air support came at an opportune time. In the black overhead, a twin-engined flare ship droned at about 1:00 o'clock on the morning of June 10. Construction Mechanic Shields and the others in the beleaguered west berm area saw bright green lights burning in the sky, shedding a flickering apple-green illumination across the camp area.

The flares were to the north and west, intended to light up the rubber-tree groves and jungle where the Viet Cong were massed to make their attack.

And, as if on signal, the fire of the attackers died off with the birth of the green lights in the sky. The enemy knew that if there was going to be a night bombing and strafing, a flare ship would come first to illuminate.

And the planes weren't long in coming. They were gunships, armed "Huey" helicopters fluttering and popping in behind the flare ship, their guns rattling and rolling in irregular cascades as they swept low over the trees to the west. Their strafing efforts shut off the Viet Cong firing for at least a few minutes.

The Viet Cong areas, to the west and north, fell silent. And in the wake of the strafing attack, Shields was one of the first to run to the

ammo bunker and lug metal cases of cartridges to the fighting holes along the beleaguered west berm.

Shields was his usual cheerful self, quick with a wisecrack, despite his wounds. His metal fragment wounds in the back and neck had been crudely dressed by a Special Forces aid man, and his face was bleeding from fresh shrapnel injuries.

The hard-hit small force of Americans along the west berm were busy now with tending to recent casualties. Thus far, the VC barrages of machinegun, mortar and recoilless rifle fire had killed or wounded a quarter of the defenders. After the replenishment of ammunition, which was the first priority, came the job of moving the wounded back from the fighting holes to less exposed areas.

And then, before half of the pressing jobs had been finished, the storm of a "human sea" attack began. Peterlin and Steelworker Bill Hoover, in the extreme northwestern corner of our perimeter trench (with earth wall or berm protecting it) saw the main enemy drive strike the southwestern berm. Beyond it, they knew, lay the best VC target: the district headquarters building, and the 105 howitzers, two of them, in pits.

First, crunching mortar shells ranged across the berm and into our support positions behind. The projectiles came fast now, almost like automatic weapons fire—and the Americans who were battle-wise guessed that the Viet Cong had moved more mortar tubes into position to bear on this extreme western position.

And the American Seabee commander, LTJG Peterlin, saw another ominous sign: a curved orange tongue of flame jetting against the night. The Viet Cong were moving in with short-range weapons, flame throwers. And they were driving over the western berm. It seemed evident they would drive a wedge between the north berm and the western one.

Peterlin moved in the direction from which the flame thrower had rent the night. When the tongue of flame declared itself again, he had his automatic rifle ready and he fired at the moving heads silhouetted by the flames. The jet of fire stopped immediately.

But now the human wave of the attack was thickening. He saw motionless men stricken down along the northern berm. The VC mortar fire had halted and he knew why. The Viet Cong had breached the line. Charlie didn't want to kill his own men. Peterlin saw the CIDG troops running to the rear. He and Hoover and

Special Forces Sergeant D. C. Dedman moved rearward, crawling over the east berm toward the town of Dong Xoai, east of the fort.

LT Williams ordered his men to prepare to withdraw to the district headquarters. Fire was coming from two directions into the lower arm of the J which was the fort. The surviving Special Forces troopers and Seabees made a defensive knot around the HQ, and the artillery pieces.

To the north, Peterlin and McCully moved through the barbed wire on the eastern edge of the fort. A mortar burst almost on top of Peterlin and he knew he had been struck in the foot. He found a deep fighting hole and heard the enemy firing when our planes strafed. He lost track of McCully. The "old man" of the Seabee detachment, the 34-year old Chief Johnny McCully, had fought manfully along the north berm until the line collapsed. He had fought beside the two Vietnamese CIDG troopers to blast the attackers with machinegun and recoilless rifle fire. He kept on firing his M–14 too, until his shoulder was ripped by a mortar burst. Then he and Peterlin had been forced to pull back.

And Seabee Marvin Shields, with the force around District HQ, his cheek and back torn by fragments, nevertheless was remaining very much in the thick of the fighting. When the Viet Cong assaulted the south berm defenses and moved to separate the two arms of the J, he and Utilitiesman Larry Eyman and a Special Forces sergeant picked up Stokes, the badly wounded American captain, and headed back toward the district chief's headquarters. They staggered through a sheet of fire, but reached the headquarters without further injury.

There, in a final defensive position, behind buttresses of sandbags, the remnants of the Seabees, the American Special Forces and the CIDG companies prepared for the fight which could be the last stand of their lives.

In the headquarters, the American Special Forces radio operator tried frantically to reach Saigon command headquarters with his patched up PRC–10 radio—asking for air support for the beleaguered outpost.

The Viet Cong attack on the final command post mounted in fury. The assault waves of the Viet Cong force had done their job well and now the attack was aided by recently captured weapons, the artillery blasts of recoilless rifles turned on the Americans and

their Vietnamese allies. Through the town area of Dong Xoai, and in the innermost perimeter, the bright flames of burning houses flickered against the dark.

Then, inexplicably as things go in war, the wall of night where the Viet Cong had been moving in with slashing fire suddenly fell silent. For the moment at least, there were no bursts of machinegun fire, no air-splitting explosions of bigger stuff, no orange-tongue hissing of flamethrowers.

And it might have been in that moment of a respite from the hellish fighting of the attack, that Marvin Shields thought about his family who were on the west coast of the U.S.. In his wallet Shields carried a picture of his wife, Joan, and his 17-month old daughter, Barbara Diane, right now staying with friends near the Seabee home base of Port Hueneme. His mother, Mrs. Victoria Cassalery, was at his home town Port Townsend, Washington. Now he was already twice wounded, his mouth torn up, his teeth broken, his back peppered with fragments—he might never survive this night and see his family again.

But in any moment of respite like that one, there were also a thousand desperate chores to be run, and Shields did his part, hauling ammunition despite his wounds, from a central bunker to outposts of the defense perimeter.

He went back to the ammunition bunker, grabbed a box of ammunition and hauled it out to the sandbagged position. He passed out the ammunition and prepared his own M-14 for the expected continuation of the Viet Cong assault.

That unaccountable pause in the Viet Cong attack went on briefly—unaccountable, at least, to the beleaguered Americans and the remnants of the Vietnamese military force. Probably, the third assault group of the Viet Cong were regrouping, out there in the dark, for a final attack, and the elimination of the inner knot of Vietnamese and American defenders. And Shields cheerfully hauled out more ammunition. And joked about the lull in the firing. "Charlie ran out of ammo--I hope."

In the interim, the American Special Forces radio operator heard a cheering message from Saigon headquarters: A strike force of fighter-bombers was on its way to help the beleaguered position. The flare ships would be coming back, to do a better job of illuminating the target. And in the east, the wall of the black night was

paling slightly, there were shades of green in it. Dawn was coming, and that was always a cheerful note when fighting the VC—who tended to attack most vehemently, like rats, only under the cover of darkness. Except that this time they were attacking in force. It was possible they would keep fighting and try to kill all of the garrison including the Americans.

The radio, full of the sounds of static, was also conveying a very hopeful message: a helicopter-borne troop reinforcement would be sent in to land nearby, soon.

Before the dawn, the two coffee-grinder engines of a flare ship were heard directly over the Dong Xoai headquarters, and this time, the sickly green points of light dangled almost directly in the sky above the Viet Cong positions to the west. In a few moments, the protesting wail of dive-bomber engines was heard as fighter-bomber planes (A1Es) shrieked down the corridors of the sky to drop yellow-flashing explosives on the area held by the VC. Some bombs fell in vain among the rubber plantations to the north, way beyond the VC attacking positions. But two bombs came close enough to shake the American position.

The Americans were cheered. Charlie, the Viet Cong, must have been hurt by the raid. But while the dawn light was growing brighter in the east, a new menace had made itself felt. Somewhere to the south, a new Viet Cong machinegun, close in, was laying a carpet of fire over the Americans, the bullets ricocheting into the inner defensive position. Several of the South Vietnamese CIDG troops were hit.

The gun was on slightly higher ground to the left near the town schoolhouse—placed so it could sweep the defense position at the district headquarters from the side, in enfilade. LT Williams, who had spotted Shields' bravery under fire, asked if Shields would help him take out the machinegun position. Williams had a 3.5 rocket launcher in hand, but would need an assistant to help him set up the weapon, and carry and load the heavy and cumbersome rocket ammunition.

Shields agreed. They dashed from building to building where they could—and tried to keep the flames of the burning structures between them and the enemy. Being silhouetted could spell sudden death.

They crept forward to the southern, outside berm, facing the school building where the machinegun seemed to be. The lieu-

tenant's calculations were right. They were in position on the flank of the machinegun nest. In the last moment, they saw the crew, the gunner and ammo carrier, firing straight ahead of them, not watching the flank.

Carefully, Williams shouldered his tube and squinted through the eyepiece, taking a careful bead. Shields, behind him, slammed the projectile into position and stood to one side to avoid the backblast, the sheet of flame which would shoot from the rear of the recoilless weapon as the rocket projectile charged from the front.

With a bang and a swish the projectile streaked to the target. Two more followed rapidly. And at the last moment of their lives, the Charlie machinegunner and his ammo carrier heard it coming. Scratch one Viet Cong 30 calibre machinegun! But a sheet of small arms fire cracked around Williams and Shields.

Then it was time for a helter-skelter retreat toward the HQ building. A fusillade of VC fire flashed around the Americans as they dashed for the perimeter. Another VC machinegun which the two Americans hadn't seen took them from the flank, and Shields was down. In the first moment of shock, he saw that his right leg had been smashed, nearly ripped off by a stream of bullets. Williams had been hit in the arm by a bullet. But two men, Builder Dale Brakken and Green Beret Private Hand, saw the two men hit and dashed into the open to help them.

Hand had been wounded by fragments, barely able to stand. Shields had crawled into a shattered building, tried to fashion a tourniquet for his leg, and lost consciousness. Brakken, also wounded, and Hand struggled to pick up Shields, while VC automatic fire slashed around them. Another Special Forces trooper dashed to help, SGT Johnson.

Hand and Brakken loaded Shields' inert form on Johnson's broad back—and Johnson dashed back to the headquarters building, carrying Shields all the way. His Seabee buddies shouted for a corpsman. The medic came and dressed his wounds as well as possible with the scarce medical supplies. But Shields, naturally outgoing and friendly and now conscious and in the grip of a selfless kind of dedication, didn't mention his pain, the shock of dreadful wounds. Instead, he tried to cheer up the Seabees in the trench. He said to the medic: "Handle me with care—I'm fragile." He meant that his leg was hanging by a few tendons.

And there was a real reason for a moment of cheer in the midst of

this final assault of the VC upon the American and Vietnamese position. The embattled defenders could hear the thrumming of helicopter rotors coming from the south, and soon they were overhead. The choppers were carrying ARVN reinforcements, and the plan, it developed from radio transmission out of Saigon, was to land the troops in a field a mile and a half north of Dong Xoai village. The usual landing strip to the south of the village was still firmly in VC hands. The whole Dong Xoai position was overrun by Viet Cong except for the tiny nucleus of resistance around the village chief's house and headquarters building.

Over the fluttering sounds of the oncoming choppers came the more determined growl and buzzing of "straight wings", a flight of stubby old A1E Fighter-bombers circled overhead, then one by one dived with wailing propellers towards the field where the reinforcements were to land. In the sandbagged positions in the inner perimeter of the American defense nucleus, the Special Forces and Seabees who were not wounded could watch these Douglas Skyraiders pirouetting in the high sky, then wailing down towards earth, the sound punctuated by chattering machineguns. Then the protesting shriek as the bomber pulled up into the sky, the black smudge of the bomb explosion below it, and the CARRUMPP of the exploding bomb, a few seconds later.

Then came the assault of the whirlybirds. Into the Landing Zone "softened" by the bombers they came slanting with their loads of reinforcing Vietnamese troops: six, eight of the fat-bellied helicopter transports which swept in low, disappeared below the trees to the north, and a few seconds later, reappeared, having dumped out their loads of solidiers. Now the choppers were climbing steeply into the sky on protesting rotors.

The Americans at Dong Xoai waited for the outburst of firing which would probably come soon if the newly arrived troop reinforcements were to be heavily opposed by the Viet Cong.

At first, there was no sound of opposition. The Americans in Dong Xoai were encouraged. The relief column might soon be there. Meanwhile, the thrumming helicopters headed south, where they would be picking up another load of troops to be shuttled into the new airhead.

The Viet Cong around the Dong Xoai perimeter had grown ominously silent. Possibly, they were moving their troops around

to do battle with the relief columns. And at that moment, the Americans heard the cacophony of sound they had dreaded: from the north, from the direction of the field which was the Landing Zone, a heavy layering of small arms fire, and the punctuating grunts of heavier stuff—mortars and recoilless rifles. The relief column wasn't getting through. Not now, at least.

Then came another sign that the relief column was hitting heavy resistance. The stubby A1Es appeared again, grinding in the high sky, wheeling over the Landing Zone to the north, and plunging one by one in screeching dives toward the ground, each pulling up with a banshee wail over the trees to the west. Then, each time there came the black oily smudge of a napalm burst rising against the sky and the thrumping of the explosion. Here was confirmation of a dread fact: The VC force must be in great strength. Instead of hitting by night into the Vietnamese government position, as they usually did, and withdrawing with the early morning light after the raid, they were staying to fight.

To the north, the A1Es were still diving down the channels of the sky, bombing and strafing. And in the Dong Xoai position, a fresh outburst of Viet Cong attacking fire raged.

The Seabees and Special Forces troops in the district chief's headquarters didn't know it, but LTJG Peterlin still lived, out there among the positions of the Viet Cong who were besieging the headquarters so fiercely. In the daylight, where he might at any moment be spotted and killed by a Viet Cong soldier, he hugged the bottom of his foxhole.

He hadn't seen or heard from the two men, Hoover and Dedman, who had taken off to the northeast with him when the VC overran the west berm. He didn't know it, but Hoover had already been shot by the Viet Cong.

In the district chief's headquarters, the seven surviving Special Forces troopers had been wounded, and of the six Seabees there, all but one had been hit. Builder Doug Mattick was the lucky man, but none of them felt lucky at that moment, when the Viet Cong threatened to close in on the final stronghold and annihilate the final defenders, Americans and Vietnamese.

And no word had been received from the 200 Vietnamese troops who had been landed in the field a mile and a half north of the village of Dong Xoai.

The besieged defenders of the last stand area in the district headquarters waited anxiously—but not a peep came from these reinforcements who were supposed to charge through the Viet Cong attackers. About noon a farmer from the landing area got through to tell the defenders at the district headquarters that the entire relief force had been annihilated by the Viet Cong, including two American advisers who had come with them.

The hurried and harried headquarters people at Saigon passed the word to LT Williams that another, stronger relief force, a battalion of tough Vietnamese Rangers, would be helicoptered into a soccer field south of the village. And furthermore, since practically all the Americans had been wounded, a rescue chopper would be sent in to pick them up and evacuate them to much overdue medical care.

But the Americans saw no sign of either the rescue chopper or the Ranger relief force, and they were running out of ammunition. In the daylight, the Americans could see the black-clad figures of the Viet Cong troops dodging closer to their position. The enemy were massing forces for the kill. The Americans decided that they would withdraw to a 105mm gun position, near the district headquarters, the final stopping-place, where they would make their last stand.

At 1:30 p.m., the wreckage of the American detachment began a halting progress to the 105 artillery pit: every man in the group was wounded except Mattick—a procession of staggering men supporting each other. It took four men to carry the painfully-wounded CAPT Stokes by safe stages, first to the bunker which served as impromptu radio headquarters—then, at last, to the 105 pit. And then Shields, who was weakening fast now. One of the detachment's two medical corpsmen, James K. Keenan of the Seabee Team, lifted Shields on his shoulder for the 50-yard dash to the gun pit.

Keenan had to put the injured man down when he reached a ditch and a barbed wire barrier. The corpsman started to drag Shields along the ground, a convulsive effort. Builder Doug Mattick pitched in to help.

At the gun pit, the battered Americans prepared for their final stand: 15 men present of the original 20. They were not to know till later what had happened to the missing men.

SGT Crow, the Special Forces communicator, had hauled his patched up PRC–10 radio to this new and final headquarters. Ammunition was almost gone. The M–14s from now on were to be fired only semi-automatically—one shot at a time, never in bursts.

Then the battered old radio began to chatter again, and Saigon HQ promised that three rescue choppers were on the way. And also that strike aircraft would be sent in as support. The choppers would land within the district headquarters perimeter. At the same time, the strike aircraft would keep the Viet Cong away.

But while the Americans waited for the bombers, strafers and the rescue helicopters, the Viet Cong territory to the west and north was ominously silent. It seemed inevitable that there would be another of those unendurable and inexplicable delays before help came.

Then, before the Viet Cong could mount that final assault, the A1E bombers droned overhead. They circled, and as before, they came diving, trailing shreds of smoke as they dived, indicating they were strafing—with the rattling sound of the guns following. Then the dark-orange explosions of napalm, the rippling flames burning against black smoke. And as before, the Special Forces operator with his old PRC radio giving the bombers corrections on their range and accuracy.

And at last, the flippering sound of helicopters coming—and radio traffic indicating that the Vietnamese Rangers, the relief force, were also on their way by helicopter lift.

Willing Vietnamese hands helped with the loading of the wounded, Vietnamese and American. LTJG Peterlin stood up when he saw some friendly CIDG troopers. They carried him to the helicopter pad near the headquarters building to a frenetic greeting from the wounded but still hearty Johnny McCully.

There was a tragic-comic moment as the choppers were about to take off in a whirlpool of noise, wind and excitement, and Doug Mattick couldn't get on: the survivors of the Vietnamese detachment were struggling fiercely to get aboard. Mattick was too tired to fight that hard. He came to realize the sad fact that he was the only American left. He ran to the PRC–10 and put in a call for help.

Fortunately, a gunship, one of the helicopters sweeping overhead to keep the Viet Cong tide back, heard his call—and came in to pick him up. It was a happy ending for him.

But not for Builder Marvin Shields, who breathed his last about 2:30 that afternoon shortly after the rescue helicopters took off heading for the hospital. He was too far gone for medical treatment now. But Second Class Hospital Corpsman Jim Keenan said later:

"Shields was joking and cutting up to the end. When he finally went under it was very quiet—nothing dramatic—he just went to sleep. The last thing he did was to thank everyone who helped him."

With their usual "Can Do" efficiency, the Seabees soon honored their hero—a year *before* he was awarded the Medal of Honor. The first camp to be built by the Seabees in Vietnam, at Chu Lai, was named Camp Shields, in 1965, the year of the Dong Xoai battle.

And still before the late Marvin Shields' Medal was given to his family, the Seabees had named another great camp, in Da Nang, after Steelworker William C. Hoover, the other Seabee dead in action at Dong Xoai.

It was more than a year after the Dong Xoai Battle that President Lyndon B. Johnson awarded the Medal of Honor to Shields (posthumously) and to Army LT Williams. The presentation for Shields was made to his wife Joan Elaine, of Seattle, Washington. Also present were Shields' father, William G. Shields of Mariana, California; his mother, Victoria B. Casselery, still living in Shields' home town, Port Townsend, Washington, and a brother, Ronald Shields, then an Army soldier. With Mrs. Joan Shields was their 2½-year old daughter, Barbara.

During the ceremony Barbara romped around the President's office, dropping and picking up her small pocketbook until the President picked her up, sat her on the top of his desk, and put his arm around her.

The President said that Shields was the new model American military man, "A new kind of fighting man, forged and tempered in a new kind of war . . . men fighting with one hand and building with the other."

LTJG Peterlin and Chief McCully were each awarded the Silver Star Medal, and Purple Heart for their parts in the Dong Xoai action. SW2 Hoover was posthumously awarded a Bronze Star Medal with Combat "V", the Vietnam Gallantry Cross with Palm, and the Vietnam Military Merit Medal.

The remaining five members of the team who saw action at Dong

Xoai were awarded Bronze Star Medals with Combat "V" and Purple Hearts. Later, the entire Team received the Navy Unit Commendation from the Secretary of the Navy.

CHAPTER TEN

Build-up Before the Build-up

The strength of American forces in Vietnam was now growing rapidly. In July 1965 the first elements of the first Army fighting divisions arrived: the Second Brigade of the famed First Division, the "Big Red One", and the First Brigade of the "Screaming Eagles", the 101st Airborne. As a general rule, the word brigade meant 4,000 or 5,000 men.

By the end of July, there were 75,000 U.S. troops in Vietnam. On July 28, President Johnson announced that number would be raised to 125,000. That figure was almost reached by September when there were 119,000. By the end of October, U.S. military strength reached 148,000—89,000 Army, 8,000 Navy, 37,000 Marines, 14,000 Air Force, 300 Coast Guard.

The "Big Red One" (so-called because the shoulder patch centered on a large figure 1 on a shield) deployed to Bien Hoa vicinity. The Screaming Eagles (name also based on the shoulder patch) provided the security first for Cam Ranh, then for Qui Nhon.

By summer of 1965, GEN Westmoreland had been convinced that the RVN could be saved only by massive additions of U.S. troops. The South Vietnamese Armed Forces were losing about a battalion a week to the VC and NVA, and the Viet Cong were gaining control of a district capital per week. It was necessary to find a way to bring American combat forces into battle early.

In the absence of any fixed front in this war, but with the avowed mission of seeking out and destroying the enemy main force, he developed an overall strategy designed to adapt to the needs of this new pattern in war. One of the key points was the "enclave theory."

For the conduct of the war with the conventional land forces and air power now being sent to him, he evolved the concept of

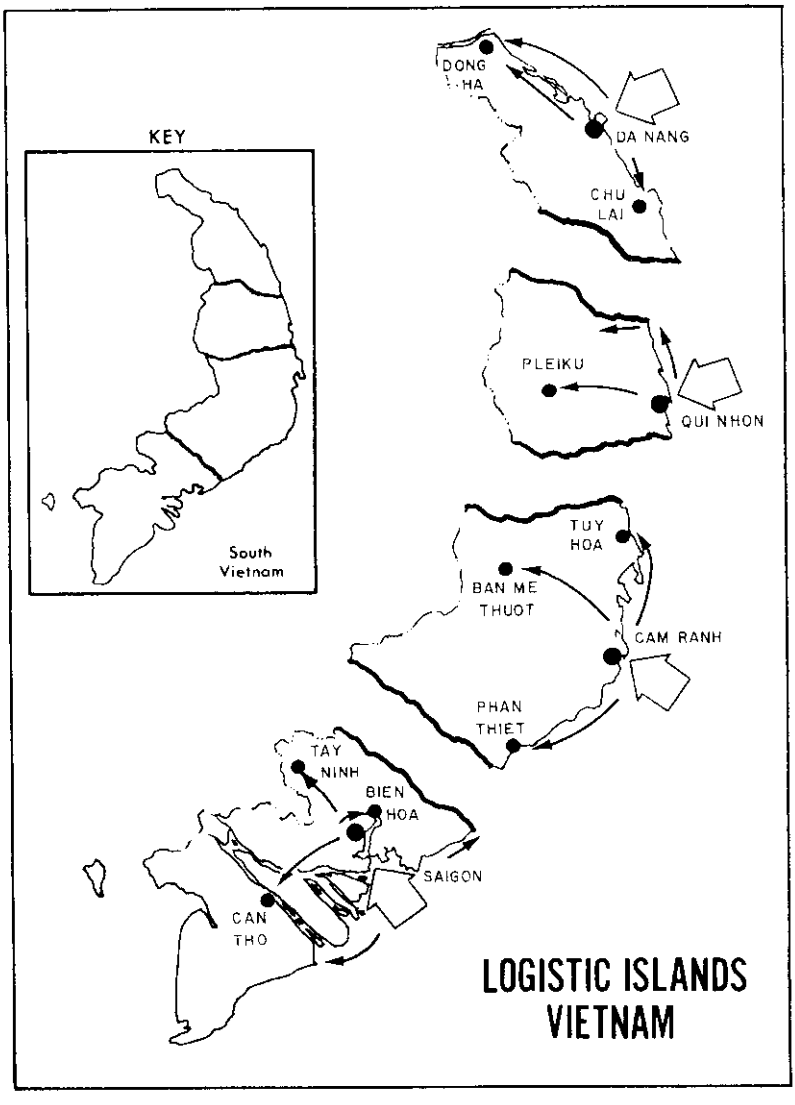


FIGURE 5

"logistic islands", or strong base areas across the country. These were from South to North, Vung Tau, Saigon, Long Binh, Cam Ranh Bay, Vung Ro (100 miles north of Cam Ranh), Qui Nhon, Chu Lai and Da Nang. In these port areas troops would prepare for tactical sweeps and large operations against the enemy as threats developed.

GEN Westmoreland summarized: "Each of these input points was designed to serve as a focal point for the launching and sustaining of military operations.

"A major consideration also was that there be air-base sites at these in-put points because of the large tonnages of POL products and ordnance required for air operation. . . .

"In those instances, e.g., Chu Lai and Nha Trang, where it was not feasible to provide deep draft ports, the decision was made that these points would be serviced by coastal shipping, principally LSTs and LCUs, from the deep draft port base areas.

"Subsequent to the development of principal ports of entry and their base complexes, it became apparent that a forward echelon of satellite logistical centers was also desirable, e.g., Pleiku, Hue-Phu Bai and Tay Ninh. . . . Overall, this logistical concept was an evolutionary one and adaptable to operational concepts as they developed. . . .

"The logistic islands were essentially intended to be that and nothing more. They did serve as reconditioning, replenishing and rest areas, but that was not their real purpose. Their primary purpose was to provide as close to the scene of operation as possible the necessary logistic support for all of our operations in Vietnam, not only land based but air and sea as well. . . .

"My concept was to develop a system that would permit continuous, sustained operations anywhere in South Vietnam, and, if ever permitted, across the border. Based on my guidance, the details of the system were developed by staff studies in which all staff elements provided in-put. . . .

"It (the logistic island concept) is the only way we could have provided in the time available the necessary support to allow us to take early combat action to reverse the deteriorating and precarious tactical situation of late '65 and early '66. . . . The logistic system might be described as a grid which covered all pertinent portions of the area of Vietnam."

This logistic island concept also generated much of the major construction which was to be accomplished by the OICC and RMK, since there was virtually nothing in the way of facilities at the locations selected for the islands and the satellite logistical centers. Out of this concept grew requirements for ports, air bases, POL and ammunitions storage, hospitals, training areas, utilities

and the whole range of facilities required at a large military installation.

Another basic doctrine which had a fundamental consequence for all, including the Service Forces, was troop rotation—one year tours for all except general officers. Coupled with the rotation system was a liberal system of Rest and Recreation (R & R) leaves: One R & R trip per year to such places as Hong Kong, Hawaii, Singapore, Taipei and Australia.

The main benefits of one-year tours, GEN Westmoreland contended, were increased general morale and a fresh influx of enthusiasm in an onerous, hazardous and debilitating war. But the rotation system brought extra strains on the supply system.

The First Cavalry Division (Air Mobile) was particularly qualified for the Vietnam type of fighting with more than 500 helicopters serving as troop transports for their rapid developments. The First Cav arrived at Qui Nhon and moved to An Khe, due west on Route 19 in the plateau country.

The way to An Khe, 40 miles out on Route 19 to the west of Qui Nhon, had been cleared by the first brigade of the famed "Screaming Eagles" of the 101st Airborne Division. The brigade killed 226 Viet Cong in the process of clearing the road and the surrounding terrain.

Scarcely a month later, the First Cav met the enemy in a month-long campaign called the Battle of the Ia Drang Valley, in Pleiku Province close to the Cambodian border. Three NVA (North Vietnamese Army) regiments had penetrated this part of the country through the Ho Chi Minh Trail. They were the 32nd, 33rd and 66th Regiments. With this major concentration of strength, it seemed that the North Vietnamese intention had been to drive across this section of Central Vietnam in the direction of Qui Nhon and Phu Cat, and cut the country into two pieces.

On October 19th, these strong NVA regimental forces struck the Plei Me Special Forces camp 25 miles southwest of Pleiku. The North Vietnamese Army struck with one regiment while keeping the bulk of the division-size force in reserve. On October 27th, GEN Westmoreland ordered the First Cavalry Division to move as a whole and to destroy the enemy force in western Pleiku Province.

The principal engagements were fought in mid-November along the base of Chu Pong Mountain in western Pleiku Province, in the

territory of the Montagnard tribe called Jarai. The assault regiment from Plei Me was driven back by strikes from our jets and ADs and by harrassment from the pursuing air cavalry. But when the First Cav put a blocking force between the withdrawing enemy and the Cambodian border, only a few miles away, the North Vietnamese commander committed his extra two reserve regiments in an all-out attempt to destroy the First Cav. The Third Brigade of the First Cav took the full force of that blow, and with supporting ARVN troops, they killed more than 1,500 North Vietnamese soldiers.

The Plei Me-Ia Drang campaign also was the first battlefield workout of the new lightweight 5.65mm (about .223 calibre) M-16 rapid-firing automatic rifle, in a battlefield competition with the Communist AK-47 assault rifle.

In mid-October, two new allied outfits arrived to assist our forces, a Korean Capital (Tiger) Division at Qui Nhon and adjoining areas in Binh Dinh Province. And at the same time a smaller force, about regimental size, the Korean Second Marine (Dragon) Brigade also arrived at Cam Ranh Bay.

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In July, the requirements for construction had been set at about $280 million. In two months, they jumped to $350 million. The Contractor already had 17,000 employees. But more were clearly needed.

In the late summer of 1965 RADM Corradi could sense that RMK was to be called upon to accomplish far more work than ever contemplated when the joint venture was originally formed. The full scope of the program was certainly not clear but he realized that this contract would be in operation for a long time to come and that consideration should be given to broadening the base of the joint venture. As has been described earlier, in a cost reimbursable contract, the government provides all of the physical assets needed. The only resource provided by the contractor is his know-how, the experience of his management, technical and supervisory people—

the same people who would be working for him to earn a profit on other fixed price contracts. RMK had now been operating in Vietnam since early 1962 and the total length of the job (to be over ten years) was yet unknown. RADM Corradi discussed this at some length with Jack Bonny, the MK President and a search was initiated for additional partners—with the ultimate inclusion of Brown and Root and J. A. Jones. RMK then became RMK–BRJ. We will shortly see the impact of these new partners and the massive recruiting campaign to bring together the experienced supervisory people who would be vital to the capability to be required by the first of the year, 1966.

As Chief of BUDOCKS, RADM Corradi had to coordinate all of this planning with Edward Sheridan and the contracting consortium. It wasn't until the last days of October that the construction figures became more firm. $86 million had just been made available under the Fiscal Year 1966 Budget Amendment, and additional requirements for funding at a later time looked like they would amount to about $275 million. Based on these figures, BUDOCKS, the OICC–RVN, and the contractor projected that there would have to be 25,000 people on the contractor's rolls by January 1966, and the OICC–RVN staff, now at 235, would have to be further expanded.

On November 1st of 1965, RADM A. C. "Ace" Husband, RADM Corradi's Deputy, took over as Chief of BUDOCKS. At the same time, RADM Walter M. Enger became Husband's Deputy. He had earlier been Assistant Chief of BUDOCKS for Military Readiness, with responsibility for the organization, training and equipment of the Seabees, from July 1961 until March of 1964, when he became Area Public Works Officer, Chesapeake Division, with headquarters at the Washington Navy Yard.

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The buildup of facilities in Cam Ranh Bay, one of the world's great natural harbors, was reactivated at OICC Saigon in the early summer months of 1965. The first builders on the scene were Army

Engineers. These were first elements of the 35th Engineer Construction Group, which came ashore June 9. They were Group Headquarters, the 864th Engineer Battalion and D Company, 84th Engineers.

Two days later, troops of the same group landed at Qui Nhon, 75 miles farther north. They were the 84th Engineer Battalion, less D Company. There was a desperate need for port, airfield and logistics base facilities in Central Vietnam.

Of the two locations, Cam Ranh was scheduled for a far greater development. The engineers, debarking from LSTs, found, like the Seabees at Chu Lai, that many of the rubber-tired vehicles were quickly mired in the almost trackless sandy desert. They had to be towed or pushed by tracked vehicles. The high-silica-content sand of this 17-mile peninsula had been highly prized by the Japanese for optical instruments during the World War II occupation. Comedian Bob Hope later called the Cam Ranh Peninsula the "World's Largest Sand Trap." The Cam Ranh Peninsula formed the great natural harbor, 17 miles of sheltered deep water. The name means "Sweet Boundary."

Once ashore in the unshaded, 100-degree-plus heat, the engineers set up a tent camp and looked for fresh water and that pure gold of the builder, rock.

Here for the first time in Vietnam the Army engineers and RMK worked together. It was the first of many occasions where the military engineers and the contractor leaned on each other for the essentials of building—almost a prerequisite in such a primitive and far-off scene, where massive and still very complex building had to be done. RMK's major job was to build a new airfield.

CDR Frank W. Day, Navy Civil Engineer Corps, who later became the Director of Construction for the OICC in this central area, summed up the job at Cam Ranh:

"How do you go about building a runway without aggregate? Without cement? And without fresh water for construction? The answer is, you improvise, make the very best use of any and all materials available and try like hell to make more available."

The advance RMK party for the airfield construction job came July 25th. These 15 men set about building a base camp for the American and Third Country Nationals who would be supervising the work. Since there was so little housing on the Cam Ranh

peninsula, plans were made to move the Vietnamese workers by ferry from the mainland and return them at the end of each day's work. By early September, however, there were only 75 Vietnamese workers. That month the number of Vietnamese workers on the site increased to 1,500.

But from June to September, the Army Engineers had tackled the basic work. They worked two 10-hour shifts per day, with a four-hour maintenance break at the hottest part of the 24 hours, midday.

The first task was to find some likely areas where rock and laterite could be quarried. Granite outcrops at the southern tip of the Cam Ranh marked their main source. The quarry was about one-and-a-half miles from the construction area.

The first building requirement was for roads which would stand up to the heavy loads of the five-ton trucks of the 513th Engineer-Dump Truck Company and 584th Engineer Company.

The roads had to be inched out from the quarry site as a rescue worker makes a path across thin ice by extending one board after the other. The Engineers found laterite, that earth rich in iron-oxide particles, in the quarry area. So they built roads by laying three or four inches of crushed granite and topping it with two or three inches of laterite.

The crushed granite was provided by two crushing and screening plants producing 1,200 cubic yards a day when at full capacity. The Engineers set up a battery of 16-cubic foot mixers, essential to pouring the concrete for the floor slabs for the cantonment and storage buildings, including their own work camp.

Within the first 30 days, the Engineers had finished their base camp, lengthened the existing 1,100-foot landing strip to 1,400 feet and built new roads or reinforced existing ones in the southern part of the peninsula. They had also started to extend the 350-foot-long pier, built by RMK in 1963–64 ("Felt's Folly"), to 600-foot length. This would expedite building greatly by providing two berths for full-size deep-water freighters.

By the middle of August, the Engineers had added equipment storage platforms, a Petrol-Oil-Lubricants (POL) storage area and temporary motor pools. By early September, with the help now of newly arriving RMK–BRJ workers, the Engineers had built more than 30 miles of roads. They had also completed their first mission of constructing cantonment and storage areas.

Meanwhile, at Qui Nhon (Noisy Lotus), 75 miles north and

also on the coast, the Army Engineers of the 84th Engineers, 35th Group were taking similar pioneer construction steps. They located a mountain of laterite and loose granite and began to mine it with bulldozers, power shovels and scrapers.

One of the first, high-priority missions was to plan for a 13-mile access road from Qui Nhon to Route 19, the French-built east-west road which led to An Khe. An Khe (meaning Gentle Peace) was 41 miles to the west on the way to the Central Highlands bastion city of Pleiku, close to the Cambodian border. Pleiku sat astride one of the main North Vietnamese supply routes by which arms, ammunition, and propaganda materials (like duplicators and radios) were conveyed to the Viet Cong. The First Cavalry, the most advanced of Army infantry divisions in airborne assault techniques, was to be based at An Khe for easy access to the embattled Central Highlands area of Vietnam. It was close to An Khe, on Route 19. We know that the French 100th Battalion ("The Centurions") had been ambushed and annihilated here by the Viet Minh in 1954.

At Cam Ranh, which was to be the second-largest port in Vietnam (next to Saigon) and the third-busiest airbase (behind Saigon and Da Nang), the Army Engineers were now (in September) working with the mushrooming construction force of RMK–BRJ.

The most-urgent-priority job of the RMK BRJ crews was to build a temporary 10,000-foot runway which would accommodate the most advanced fighter-bombers in the U.S. military arsenal, the 1320-mile-an-hour F–4s.

Construction activities on the runway began in late August with surveying and clearing, grubbing and the digging of plant roots. Cut-and-fill operations began September 1st. Tests were run with AM–2 matting to find out which sub-base would be best. Best, that is, for mounting the AM–2 on the round-grained, silica-heavy hard sands of Cam Ranh.

Similar experiments, but with a partly operative runway and taxiway, were then going on the hard way at the Seabee-built Chu Lai base, 200 miles to the north. We have noted in Chapter 9, the bitter trial-and-error process of working out the best sub-base while the runway-on-sand was being used by Marine attack pilots on combat missions. Because of this, the Seabees could work on repairing and changing only part of the runway at a time.

The Seabees were to conclude that a plastic membrane on a

laterite sub-base with an asphalt "shot", itself riding on a vast base of compacted sand, was the best solution for the problem of building a workable runway.

The engineers of RMK–BRJ and OICC at Cam Ranh tried various methods of compaction, stabilization and sub-base preparation before they began to lay the runway. Working quite independently of the Seabees at Chu Lai, they reached a similar conclusion: The sand should be thoroughly compacted (and thoroughly wet down) and the sub-base shot with medium-cure asphalt oil to retain the moisture content. This seemed to anchor the sand.

But the OICC/Contractor engineers differed from the Seabees about using plastic membrane; nor would burlap work as sub-base topping before the application of the aluminum planking. A protective covering was considered undesirable. Later experience with the SATS (Short Airfield for Tactical Support) temporary airfields in Vietnam substantiated this conclusion. In other aluminum-matting runways (Chu Lai included), the use of burlap or plastic membrane backfired. When an aircraft lands and applies brakes, the membrane (especially the burlap kind) tends to ball up and tear under the longitudinal and transverse forces applied by the aircraft wheels.

They also experimented with the degree of transverse arc or gradient in the arch of the runway to prepare for the heavy storms of the rainy monsoon. They concluded that a high crown would be necessary, but a 1½-inch crown was maximum possible on the 102-foot-wide runway. Beyond that, there would be "bridging" of the aluminum structure.

But before these more complicated considerations, there were many more old-fashioned problems to be solved—like earth moving. Around the runway alone, 350,000 cubic yards of sand had to be levelled and carted off.

The RMK–BRJ forces here were suffering from the lack of good high-speed earthmovers. They were quickly made available by COL W. F. Hart, the commander of the Army Engineers (the 35th Group).

In these pioneer contractor days the OICC and RMK–BRJ people had a minimum of time for experiment, except for the kind of experiment that comes organically with building the projects. At

Cam Ranh, they decided to flood the airfield areas with salt water for 24 hours, then remove the irrigation pipes and compact with vibratory compactors. As a preliminary to the compacting process, 16,000-gallon water trucks wet down the grade once more and then 30-ton rubber-tired rollers made five or six runs over the area. It was found that steel road rollers had the effect of pushing up the sand in hillocks ahead of them—rubber-tired rollers were much more workable.

The scalding temperatures of 100 degrees-plus added another unpredicted difficulty in handling the pallets of AM-2 matting in the daylight hours. Heavy gloves, oil and sometimes sand were used to protect the hands of the work crews. The night hours were more comfortable for working, but portable generators, light towers and floodlights had to be used.

Of the first RMK–BRJ workers on the runway, more than half were women. Because of the demands of the war, there was already a shortage of manpower. Here, as in later contractor projects, the "little tiger ladies", most of whom weighed less than 100 pounds and stood only an average of five feet tall, were more than equal in strength and will to the demands of the heaviest construction equipment. They were also bright students in learning to use the machinery.

Many of them were already war widows, and of course the percentage grew much higher as the list of ARVN soldiers killed-in-action rose to 100,000 by the end of 1968 and 163,000 in the final phases of our building program in 1972.

One of the fundamental problems in building the airfield was the difficulty of moving the oil, building materials, aluminum matting, etc. from the Army port area eight miles away. Haul roads improvised in the sandy waste were treacherous. Any available bulldozers were used to push trucks, tankers and stuck "pans" or scrapers out of the many sand traps. RMK–BRJ crews and Army Engineers hastened to bolster the improved roads with laterite. But the available aggregate was growing very scarce.

The Cam Ranh runway was finished on October 16, 1965, 50 days after the start. That day, ADM U. S. G. Sharp, Commander-in-Chief Pacific (CINCPAC), laid the last AM–2 plank. By October 22nd, the first cantonment, base and supply buildings and the

fighter parking aprons and taxiways were completed. Two days later, the temporary showers and sanitary facilities for Air Force were ready. So was Cam Ranh's first deep well.

On November 1st, 1965, the first six F–4 Air Force fighters roared into the 10,000-foot AM–2 runway. The squadron prepared for its first combat mission out of Cam Ranh. The next day they flew it, 67 days after construction had started.

One year later, by the way, takeoff and landings were up to 18,000 per month. And the Air Force was still using the "temporary" runway, which had been designed for six months' service.

As troop commitments soared, so did building. The number of contractor employees in July of 1965 had risen to 15,708. By the end of October it was up to 22,312. At the same time, the all-important index of monthly Work-In-Place was about $9.5 million.

In October of 1965 the Yards and Docks Headquarters thought they were already embarked on a program of colossal expansion. Like many of the amazing achievements of the building program in Vietnam, that level was to pale into nothingness compared to the zooming, cliff-like vaults of the pressing, immediate future—where every problem had to be solved yesterday or the day before that.

On 9 January, 1965, the RMK weekly superintendent's meeting had been startled to hear the latest bombshell of a demand from the OICC: a level of $5 million Work-In-Place per month figure. This was startling because this amount was four times the WIP per month for the last 30 months. To accomplish this, the American personnel with RMK in Vietnam were to be more than doubled, to 450. And the work force, then at a total of 4,973, was to be tripled by July.

If that had seemed a large increase, with the resulting strain on the hiring and recruitment mechanism both in Vietnam and at home, from July the levels of personnel and Work-In-Place kept zooming upward. A brief levelling-off point after November 1965 was followed by an even steeper climb to the all-time peak of manpower in July of '66 (51,044), and WIP in March of 1967 ($64.0 million).

The greatest growth was achieved beginning in December of 1965, immediately following a highly significant visit by Secretary of Defense McNamara when impossible demands added to already-impossible demands, resulted in one of the greatest paroxysms of

building effort in mankind's history. It involved RMK-BRJ, the Seabees and other military engineers in Vietnam. Also included should be the major effort to erect the largest airfield in Southeast Asia in a swamp in U Tapao, Thailand, and a port to match it, both put up by another large contractor combine, Dillingham, Zachry, and Kaiser (DZK).

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1965 had been an exhausting construction year. To recap some of the highlights before Secretary McNamara's epochal visit:

In January, 1965, the transportation problem for moving workers in-country reached a point of complete over-saturation. It was suggested that a chartered DC-3 was the solution. In July, Continental Air Services, a Southeast Asian subsidiary company of the American Continental Airlines, signed an agreement to provide a chartered DC-3 within ten days. It had bucket seats and a cargo door, and in other ways seemed the correct answer for the immediate transportation problems. But as the program kept growing, it seemed evident that many more than one aircraft would be required. Eventually, as the work zoomed in 1966 and '67, a fleet of 16 aircraft chartered from the Continental stable was flying full time for RMK-BRJ.

Meanwhile, transportation of other kinds had also become a leading problem. Air transportation was needed to move people daily to the 20 sites that were in operation, and lift the 30,000 to 50,000 pounds of air freight which accumulated every day. But even more massive was the need to handle the materials which came by water. In May, to avoid the bottleneck of shipping that had accumulated outside the one true deep-water harbor, Saigon, the Yards and Docks planners had developed a scheme to trans-ship ocean-going construction cargo from the Philippines to the many shallow water ports which were available in Vietnam, by LST.

The MSTS (Military Sea Transport Service) had stated in May that they could supply sufficient LSTs to pick up cargo at the port of Poro Point. But by December, the MSTS had been unable to find

sufficient LSTs for the job. RMK–BRJ immediately took action to locate LSTs in world ports for charter for the Vietnam service, but as the year ended only six had been located, in six different ports. The difficulty was eventually solved by the rapid installation of prefabricated piers in Vietnam ports. Thus, deep-draft ocean-going ships could go directly to Vietnam.

In surveying the building accomplishments of 1965, before the Secretary of Defense's November visit, it is clear that much had been started. But it took a healthy boost from McNamara to snap it into high gear.

At Cam Ranh, the contractor had placed 2.2 million square feet of AM–2 matting and 1.3 million square feet of pierced steel planking (PSP in a cargo apron), airport facilities, utilities, electric power system, messhalls, and 25,000 square feet of living quarters (H-model quonset huts) for the U.S. Air Force. And this work had been done despite the fact that there were no roads, no camp facilities, no shops, and a very slow system of supply by sea.

In the Saigon vicinity, several projects were underway. One important project was the building of a new U.S. Embassy, following the massive bombing of the former building on March 30th, 1965. The explosion killed two Americans and 11 Vietnamese and injured Deputy Ambassador William J. Porter.

A large Army logistic depot at Tan Thuan on the filled-in banks of the Saigon River was begun October 9th. There were to be 21 buildings originally, but that number was increased later in 1966 to 88.

A new quay, 9,510 feet long with two approach ramps, on the Saigon River near the Army logistical depot was started, with pile driving beginning in December.

At Tan Son Nhut, the later part of 1965 saw the beginning of construction for an ammunition depot, concrete parking aprons, along with a series of United States Air Force barracks, cantonments, and storage facilities, including a 30,000 square foot messhall.

Outstanding among the many burgeoning construction sites was Bien Hoa, the Air Force base; new POL storage, U.S. Army cantonment and flight line facilities, taxiway resurfacing, aircraft parking aprons, and a new hangar were all underway.

Other building operations at Bien Hoa were for an aircraft main-

tenance shop, a cantonment city, to include 78 buildings, such as troop housing, messhalls, administrative buildings, warehouses, post exchange, fire station and water, sewer and power station.

At Phan Rang, next north from Bien Hoa, on the coast, RMK–BRJ worked with an Army Engineer battalion to build an interim airfield of AM–2 matting, like that which the Seabees had built farther north at Chu Lai.

At Nha Trang, the Eighth Field Hospital had to be enlarged and modernized for the U.S. Army, with 20 new buildings. It was started in October of '65.

Beyond that, at Qui Nhon, new POL storage and rehabilitation work in a Vietnamese government hospital was proceeding along with major work, including offices and a cantonment for the airfield, a large hangar, messhall, dispensary, chapel, administration, storage and supply buildings, and water, power and sewage systems, together with roads and drainage. A three-building hospital was started and 17 quonset huts were added as support facilities for the hospital.

At Chu Lai, next to the north, besides the Seabee project then going on, RMK–BRJ was mobilized to expand the work of the military engineers. The first RMK party of 16 Americans arrived on June 26th.

The RMK–BRJ projects in 1965 included a concrete runway and warm-up apron, 10,000 feet long, 150 feet wide, and 11 inches thick on an 8-inch soil cement sub-base. But before that could be tackled, because the pontoon pier of the Seabees was so sorely belabored, the RMK–BRJ builders started on a higher priority job on the orders of the OICC, an LST ramp for a year-round unloading area. It was to have a laterite base and a crushed rock surface.

Another emergency job was to build a temporary parking apron for Marine Air Group 12, the A4 attack group, to be made from government-furnished aluminum matting on six inches of laterite. A Marine Corps road had to be relocated as well.

The causeway pier made of pontoons, desperately maintained despite the stormy seas, was finally wrecked in mid-October, and the RMK–BRJ workers were directed to finish the LST ramp work immediately.

At Da Nang, the big job was to build a brand new 10,000-foot asphalt runway parallel to the runway finished in July 1964. The

project included a thousand-foot concrete touchdown section at either end, thousand-foot asphalt over-runs, taxiways, airport roads, runway lighting and warm-up aprons. The building of the new runway was begun August 7th, and was well under way as the year ended, despite the rainy season.

Across the river, at the south end of the East Da Nang Peninsula, a 2,600-foot runway and parking apron were built of pierced steel planking. And with it, an access road. This was the light plane and helicopter airfield called the Marble Mountain Air Facility.

Another of the high priority projects starting in October, 1965, was to build a 300 by 40 foot timber pier and two LST landing ramps at the so-called Museum Wharf (so-called because the French had built a small historical museum there) on the west bank of the Da Nang River.

Building projects of a less-large-scale were being tackled in the Delta. In the economic sense, the Delta was the most important part of Vietnam, and it had, accordingly, most of the population. But the pressing war emergency building seemed to be, in the judgment of MACV, the long panhandle area reaching up towards the sensitive border of North Vietnam, along the flank of Laos and Cambodia.

Starting south from Saigon, the closest site in the Delta area was Vung Tau, where RMK went back again in early March 1965 to repair the runway.

A large program began for an Army support facility, including a control tower, troop cantonment, messhall, POL storage, a network of area roads, a 750 kilowatt electrical power system, new aircraft aprons and warehouses, an array of quonsets for aircraft maintenance, and a communications building.

A new tropical modification for quonset huts, which involved raising the ridge vent, more windows in the sides and a continuous sill vent at floor level for better ventilation was evolved in this building job. This "tropicalized" design was eventually to be used throughout Vietnam.

One other high priority project, important to the conduct of the war, was a troposcatter radio station atop the highest hill at Vung Tau—appropriately called VC Hill by Americans. There was a rush to put up the 60 foot antennae and concrete pads for the communication bands which were ready to be installed in this rush project.

Next going south, My Tho, on the northernmost mouth of the Mekong, had a hospital rebuilding project authorized, but the project was held up because the road transportation to Saigon was victimized by many VC attacks. The airstrip at My Tho was only a 1200-foot laterite affair, and this limited the transport aircraft which might have been used to the Army short-takeoff-and-landing transport, the Caribou. Therefore, the My Tho hospital project and airfield extension and modernization lagged into 1966.

Next south in the Delta was Vinh Long, about 65 miles southwest of Saigon along the middle mouth of the three Mekong outlets.

On April 16th, 1965, four RMK superintendents moved into Vinh Long. They found quarters in private houses, and a house was leased in downtown Vinh Long as an office.

The construction involved a wide program of cantonment areas and utilities. There was also to be a maintenance hangar, gas and POL storage, avionics and vehicle repair buildings.

Near Can Tho, in the heart of the Delta, an NTP (Notice To Proceed) for more construction at the new airfield at Binh Thuy was issued to RMK by the DOICC in January of 1965. Included in the job was 420,000 cubic yards of fill, enough to fill the Empire State Building. When the final fill job was completed, by the way, that figure had more than doubled, and was nearly enough to fill the world's largest office building, the Pentagon in Washington, D.C.

The new airfield had been started at Binh Thuy, a western suburb of Can Tho, by RMK in 1964. It has been a 6,000-foot asphalt runway (after 680,000 cubic yards of excavation), taxiway and headquarters buildings.

At the older Can Tho airfield, the first holdup was in land procurement, since the boundaries shown on the plan were not the same as those claimed by local occupants. The claims of territory of course were in favor of the local occupants. The first dredge available, a 12-inch suction dredge belonging to the ARVN, arrived in early May and began fill operations. But the fill had too little sand, too much silt--that useless mess which the construction stiffs call "slit." It did not compact, and the search for bottom sand with less silt content was unavailing in that locality.

RMK-BRJ took the expedient course and used local vendors to haul in sand. A total of about 80,000 cubic yards was required to

provide foundation space for two quonset warehouses, the officers' quarters, the sewage lift station and the generator building. The work force then at the Can Tho site was 40 Americans, ten Third Country Nationals, and 1,700 Vietnamese.

Still farther south in the Delta, the southernmost RMK–BRJ work was at Bac Lieu, also known by the name Vinh Loi. But whether called Vinh Loi (Honored Ford) or Bac Lieu (Historical Crossing), it was an advisory base 120 miles south of Saigon on the South China sea, 25 miles south of the southernmost of the Mekong mouths. The job here in 1965 was to build support buildings for the U.S. Army Advisory Team.

On the other side of the Delta Peninsula, approximately opposite Can Tho, in the Gulf of Thailand, RMK–BRJ had a project of building a pier.

The site was a large island off the southern tip of Cambodia called Phu Quoc (Rich Country). Situated on the southern tip of Phu Quoc, the site took its name, An Thoi, from the chain of small islands just off the coast of this large island. The name is notable because it shows that the Vietnamese are not without a sense of humor. Literally, it means "Peaceful Stink."

The area was famed in Vietnam because it was a principal source of the strong-smelling fish sauce condiment called Nuoc Mam. Like our Limburger or Liederkrantz cheese, Nuoc Mam has an obviously strong odor, but after the first mouthful the taste is so supposedly delightful that the bouquet becomes acceptable to devotees. Nuoc Mam is made by allowing fish to ferment in open vats, usually for months. The corruption that forms on top is skimmed off periodically, and the end-product is the rich color of vin rosé. It is used as a sauce on many Vietnamese dishes and it is said to contain many healthful vitamins.

RMK personnel at the An Thoi site arrived by one of the motorized junks of the South Vietnamese Junk Force, on December 14th, 1964. An LST brought the living-trailers and other supplies and equipment which would form their basic camp.

By April 30th, the pier was completed: 177 concrete piles had been driven and 210 cubic yards of concrete had been placed. This base was very important to the surveillance of smugglers infiltrating arms, ammunition, and other war material to the Viet Cong in the Delta. The U.S. Navy maintained a surveillance base, beginning in 1965, as an "afloat" facility at An Thoi.

By November 1965, the cumulative value of the RMK–BRJ contract was becoming considerable. It stood at about $250 million. Yet compared to its eventual size, that was small.

As of that November, even before the visit of the Secretary of Defense, the leaders of the building program were anticipating an even larger increment in building.

At meetings in the RMK–BRJ headquarters in November, Lyman Wilbur, the Resident Partner at Saigon, discussed with his staff rumors that the average Work-In-Place per month was expected by OICC to increase to $25 million, and that it might be raised to $35 million. Wilbur said it could be done. Said he, optimistically: "We have had many problems raised by the increase in the program, but in every case our output has been greater than the expanded program."

As the requirements for construction were firming up in late 1965, major attention was also being given to many other aspects of logistics support. Of importance to the Marines and the Seabees, Da Nang was on its way to becoming a great base for American and RVN military operations in the North. Already, it was clear that the major ground forces in this northern section of South Vietnam were going to be U.S. Marines. This meant that the U.S. Navy was going to be establishing a great supply base to support Marine operations both by land and sea. And of course, Da Nang was building into the major port for operations in the North.

In March of 1965, the nucleus of a great military-Naval enterprise, Naval Support Activity Da Nang, was patched together from ships and units from the Atlantic and Pacific Fleets to support the Third Marine Amphibious Force. Under the operational control of the Commander, U.S. Seventh Fleet, the Support Group in Da Nang was given the title of Task Group 76.4.

In July, 1965, NSA was formally established and Task Group 76.4 abolished. But until October 15th, 1965, NSA, with a force of 800 men on Temporary Duty from other commands, was a very rough, embryonic organization with no assets of its own, no personnel allowance, no facilities on the ground, and no funds for construction.

Two highly-placed prime movers, RADM Edward B. Hooper, COMSERVPAC (Commander Service Forces, Pacific Fleet) at Pearl Harbor, and LTGEN Lewis W. Walt, the Commander of the Third Marine Amphibious Force, pushed for the resources to em-

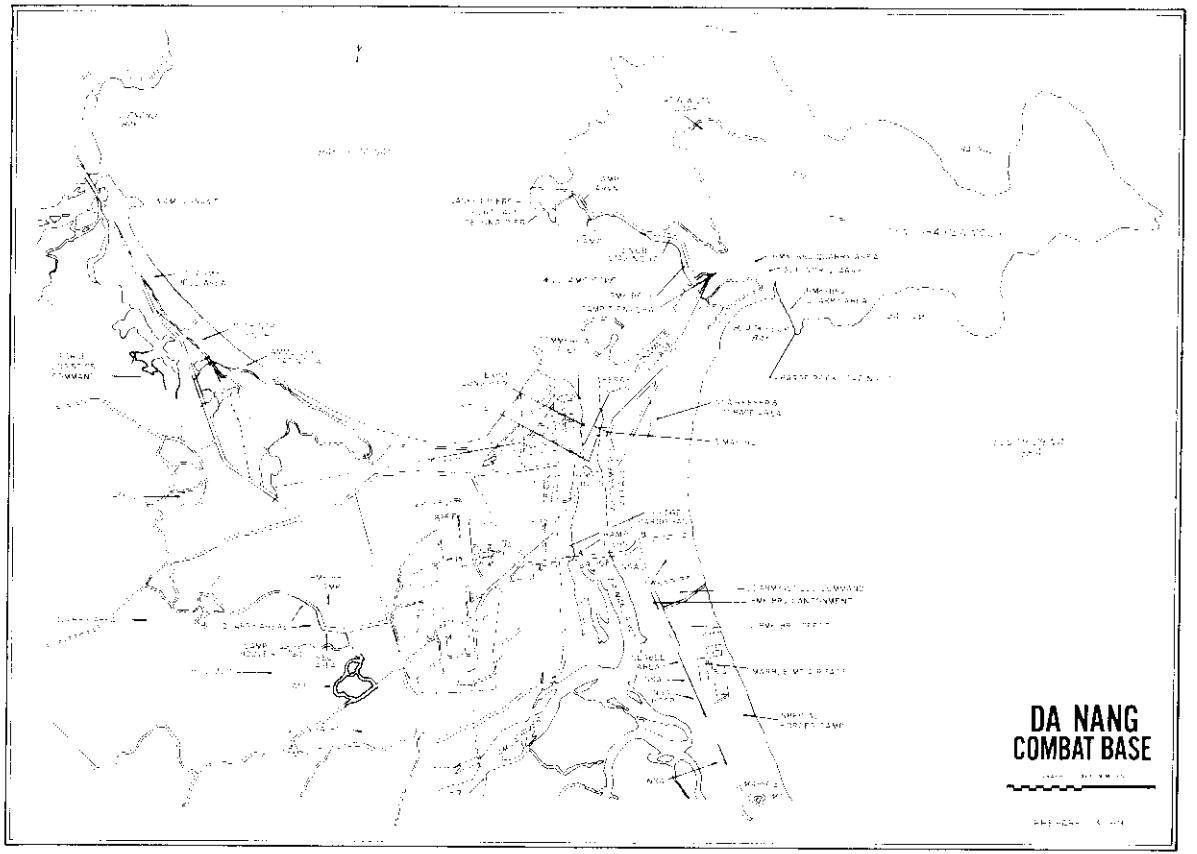

FIGURE 6

power the new NSA to function. Both were men of action. The first Public Works Officer, LT H. L. Higgins, reported August 10th, 1965. By 1967, NSA Da Nang had the largest Navy Public Works Department in the world.

As the nature of the new requirements to be placed on RMK–BRJ emerged in late 1965, the tempo of activity at BUDOCKS Headquarters increased. The concerns and questions which were being studied in Saigon and Hawaii were also being studied by all of the high level Washington Headquarters—the Office of the Secretary of Defense, the JCS and all of the services. RADM Husband's Assistant Chief for Construction, CAPT Lalor, found himself spending virtually all of his time in consultation with the many players of the Southeast Asia problem. He was the BUDOCKS "answer man"—and kept in close contact with what was happening in Saigon by frequent official communications and telephone calls with CDR Albion Walton, his counterpart at the BUDOCKS Pacific Division. It soon became clear that CAPT Lalor could not carry out his full range of responsibilities for the BUDOCKS construction program in the rest of the world and at the same time focus so intently on Southeast Asia.

RADM Husband, with characteristic perceptiveness, could see the nature of the problem confronting his principal assistant and decided to relieve him of all non-Southeast Asia responsibilities by creating a new organization within the Headquarters. Conceived to operate much like the Navy's special project managers, like the Polaris Special Project, the new Southeast Asia Coordinating Group reported directly to RADM Husband and was given authority to utilize any resources of the Bureau to solve Southeast Asia problems. CAPT Lalor was given an "override" priority and all other components of the Bureau reported to him and coordinated with him on all SEA matters. His new outfit used the acronym SEACOG and his action representatives in other components were known as the SEA GEARS. The new organization was staffed with carefully selected officers and civilian personnel to assure the maximum responsiveness to all field problems requiring Washington solution or assistance.

CAPT Lalor was relieved in July 1967 by CDR Robert Jortberg who had just completed an assignment as Chief Staff Officer of the 30th NCR. SEACOG, also known as Code PC–1, continued to

function as the focal point of all Southeast Asia matters within the Naval Facilities Engineering Command, until the staff started to phase down in early 1968. The cycle was completed on 1 February 1969 when PC–1 was disestablished and the Assistant Commander for Construction, then CAPT R. C. Williams, assumed the responsibility for Southeast Asia along with the rest of the world. The transition was particularly smooth since CAPT Williams had served with OICC RVN during the highly critical 1965–1966 period and had completed an assignment in the Southeast Asia Construction Operations office in OSD just prior to reporting to this NAVFAC assignment.

CHAPTER ELEVEN

The Seabee Saga—Vietnam Style

In July, 1965, NMCB-9, under CDR Richard E. Anderson, was deployed to Da Nang with the primary objective of building a large (400 bed) Navy hospital. Therein hangs an exciting tale of another forceful involvement of the Seabees in the Vietnam war, in one of the bloodiest actions joined by Seabees in the entire history of the war.

This 400-bed Navy hospital was to be erected on an emergency basis from such Navy stock-on-hand supplies and equipment as quonset huts and other accessories of World War II vintage, from Prepositioned War Reserve Stock. The hospital was to be just south of the new Marine Marble Mountain Air Facility. At first, the project went very well, ahead of schedule, in good Seabee form.

Very early on October 28th, shortly after midnight, the Viet Cong launched an attack of 150 to 200 men upon both the air facility and the hospital, then about half-completed. And the Seabees, as at Dong Xoai, and later on at such places as Khe Sanh, Dong Ha and Nam Can, conducted themselves in the best "Can Do" tradition of the Service. And once again they were true to their Latin motto: "Construimus, Battuimus", or "We Build, We Fight."

The Battalion, fresh from training at Port Hueneme, California, was built on the new model, 738 men and 24 officers. More of this later.

* * * * *

The Seabees' opposite numbers, the Army Engineer battalions,

were of two kinds, combat and construction. The combat engineers, like the Marine engineer battalions, were involved in work such as mine sweeping and demolition and had a strength of 41 officers and 758 enlisted men.

The construction type of Army Engineer battalion had the capability for larger and more permanent construction, such as Army camps, buildings, roads, forward tactical and cargo airfields, bridges, and emergency reconstruction of railroads. This was similar to the work accomplished by the Seabees. And both kinds of battalions were frequently involved in very dangerous work close to the hot action. Such, of course, was the case with NMCB-9.

Up to this time, and until the peak military engineering year of 1968, the Army engineer battalions were assigned to jobs in the second and third Corps (I Corps was the northernmost of the military zones, and the numbering increased as one moved south). The Delta was IV Corps. The II and III Corps were the sites of principal Army activity at this time, and the majority of the troops in the I Corps, closest to the border of North Vietnam, were Marines.

The Air Force introduced their RED HORSE troops into Vietnam in 1966. RED HORSE is an acronym standing for Rapid Engineer Deployable Heavy Operational Repair Squadrons Engineering.

The RED HORSE units were 400 strong, 16 officers and 384 enlisted men, on the average. They were unique among military engineering units in that they employed large numbers of Vietnamese workers, 500 to 700, and thus greatly expanded their capacity.

Before the RED HORSE Squadrons were deployed to Vietnam, smaller teams of Air Force engineers called PRIME BEEF (PRIME for prime, BEEF an acronym for Base Engineer Emergency Force) had been drawn from base maintenance units in CONUS (Continental United States) to tend to the mushrooming base maintenance needs in Vietnam. They were smaller units: perhaps 59 airmen, one officer and up to 300 local civilian workers paid with Operations and Maintenance dollars. A PRIME BEEF team of construction specialists during the Bien Hoa airbase construction had expedited the building of F-100 revetments and extra housing units. Another worked on the Da Nang airbase on revetments and aircraft parking areas.

In late 1965, Air Force was given approval for organization of six RED HORSE squadrons for use in Vietnam and Thailand. Five of the six were activated for Vietnam duty with a peak strength of 2,000.

When U. S. Air Force wings (each usually with three operational squadrons and necessary supply, maintenance and administrative units) were deployed to Vietnam, they took their usual base maintenance forces with them. RED HORSE squadrons were sent to assist, as were smaller PRIME BEEF units to help the base maintenance forces. The RED HORSE tour of duty was one year. PRIME BEEF units worked on a four to six-month Temporary Duty cycle.

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In the spring of 1965 there were approximately 9,500 Seabees on active duty at various sea and shore locations. Of this number, around 5,700 were distributed between the ten Naval Mobile Construction Battalions and two Amphibious Construction Battalions. The Amphibious Construction Battalion assigned to the Atlantic Fleet was home based at the Amphibious Base, Little Creek, Virginia. The Amphibious Construction Battalion assigned to the Pacific Fleet was home based at the Amphibious Base, Coronado, California, and maintained a detachment at Yokosuka, Japan. Personnel strength in these two units in early 1965 was approximately 400 and 300 respectively.

The five Naval Mobile Construction Battalions assigned to the Atlantic Fleet, NMCBs 1, 4, 6, 7 and 8, were homeported at the Construction Battalion Center, Davisville, Rhode Island. Four of these units were of approximately 450 man strength and one at 220 man strength. The five Naval Mobile Construction Battalions assigned to the Pacific Fleet, NMCBs 3, 5, 9, 10 and 11, were homeported at the Construction Battalion Center, Port Hueneme, California. These units averaged approximately 595 men each although the authorized allowance for all 10 NMCBs was 21 officers and 563 enlisted men. Later, security requirements and the special needs of the extensive road and airfield construction would boost

the Vietnam allowance to 24 officers and 738 enlisted men, while actual manning often exceeded these totals.

In May 1965, NMCB 10 was the "Pacific Alert Battalion" working at Camp Kinser, Okinawa, when word came for the Marines to hit the beach at Chu Lai.

Another battalion, NMCB 3, was considered to be the second-most-ready battalion in the Pacific area; they were designated the back-up battalion and were employed on Guam. NMCB 11 was also on Okinawa in May 1965 while NMCBs 5 and 9 were in homeport at Port Hueneme retraining.

On the Atlantic side, there were also five battalions in various degrees of deployment. NMCB 1 had just recently arrived at Guantanamo Bay, Cuba, NMCB 4 was in Rota, Spain, and NMCB 6, just back from Antarctica, was in homeport. Two other battalions, NMCBs 7 and 8, were also in homeport at Davisville, Rhode Island, after completing overseas deployments. NMCB 8 in homeport served as the Atlantic Alert Battalion, ready to deploy in 48 hours.

Shortly after the first Seabees arrived in-country, it became obvious that the needs of the Vietnam war would far exceed those of Europe, Africa and Latin America, and it seemed logical to forego the fixed and equal assignment of battalions to the Pacific and Atlantic sides. Captain Spencer R. Smith, then Commander of the Atlantic Fleet Seabees (COMCBLANT), suggested that in these days of air deployments of troops, the arbitrary assignment of battalions to the Pacific or Atlantic zones was no longer needed. Under his direction, a proposal was made to make the battalions available where needed.

As a result, Atlantic Fleet Seabees began terminating their peacetime construction and training tasks and turned their eyes to the Pacific. NMCBs Four and Eight were reassigned from CBLANT to CBPAC and their homeport changed from Davisville to Port Hueneme. Thus began the deployment of Atlantic Fleet units directly to Vietnam from their Davisville and Gulfport homeports. COMCBLANT retained administrative control over these units and they returned to their Atlantic Fleet bases for their homeport training periods. This evolution proved the interchangeability, flexibility, and mobility of the Seabees like no other contingency could, and established the policy of employing NMCBs in a total

force utilization and readiness concept responsive to world-wide requirements. This concept was retained after Vietnam when battalions returned to pre-RVN development sites.

As the nature of the Seabee requirements in Vietnam became apparent in the late Spring of 1965, the problems involved in defining the construction projects the battalions were to do, determining priorities, planning new camp locations, supervising the transfer of equipment between battalions at the time of rotation and assuring the supply of materials for the battalions also surfaced. The COMCBPAC and Bureau of Yards and Docks staffs recognized the need for a Seabee Regiment in Vietnam. In fact, the Vietnam requirement ultimately forced several major changes in the Seabee command structure. These changes will be discussed in detail at several points in this story. At this time, the problems associated with the "instant" creation of a Naval Construction Regiment are of interest.

The more the Seabee planners thought about the things to be done by a regiment, the more it became clear that the need was immediate—it couldn't wait for the normal procedure of getting authority to establish a new unit of the Navy, with its personnel allowance, budget and so forth. It was decided to create the regiment on a temporary basis using existing people and assets pending the formal action. At this time, CAPT H. F. Liberty was on duty in Hawaii on the staff of RADM Davis (COMCBPAC/COMPACDOCKS). It was determined that he could be borrowed for an extended period so he was sent to Da Nang on a TAD (temporary additional duty) basis. Other officers and enlisted personnel were borrowed from the CBPAC staff and from the battalions to get things started.

RADM Davis temporarily reassigned LCDR John R. Wear then the Officer in Charge, Seabee Teams Detachment (Vietnam/Thailand) to Da Nang to serve as the nucleus of the 30th Construction Regiment and to pave the way for the first units to arrive at Da Nang—two 100-man air detachments from NMCB–3 and NMCB–9.

LCDR Wear proceeded to Da Nang where he coordinated the lease of office and living spaces to accommodate the 30th NCR staff. Space in an office building known as the White Elephant in downtown Da Nang was made available as Regimental headquarters. Furnishings were provided through a local contract.

A villa was leased with assistance of COL Tien, Mayor of Da Nang, to house the 30th NCR staff. Space was designated in Hill 327 area to accommodate the Air Dets from NMCB 3 and NMCB 9 which arrived on 18 May 1965 and 14 May 1965, respectively, to prepare camp facilities in preparation for their respective Battalion's arrival. The main body of NMCB 3 arrived via LSD 31 (Point Definance) and other ships on 26 May 1965 and was located in an area immediately northeast of Hill 327. NMCB 9 arrived via USNS BLATCHFORD on 27 June 1965 and was located near Marble Mountain in Da Nang East (later Camp Adenir). On 7 May, NMCB 10 arrived with the Fourth Marine Regimental Landing Team at Chu Lai by amphibious landing.

CAPT Liberty reported on 10 May 1965 as Commander, 30th Naval Construction Regiment. The 30th NCR organization envisioned an integrated Navy/Marine Corps staffing, i.e., Commander, Navy; Chief Staff Officer, Marine Corps; Operations Officer, Navy; Assistant OPS Officer, Marine Corps; Supply Officer, Marine Corps, etc. COL William R. Gould, USMC, was the first Chief Staff Officer; however, Marine Corps staffing was minimized as the nature of the joint Seabee/Marine operations evolved. CDR Robert F. Jortberg relieved COL Gould in May 1966. CAPT Nelson R. Anderson relieved CAPT Liberty in September 1965 to become the first permanent Regimental Commander in Vietnam.

The primary role of the 30th NCR in the May to July time frame was to coordinate with the III MAF in order to identify the Seabee workload and the priority of construction requirements, and to provide support for the Battalions.

* * * * *

Now back to the Da Nang Naval Hospital. NMCB–9, one of the first three battalions to serve under the operational control of the 30th NCR in Da Nang, had been prepared for the ordeal of a VC attack through the thoroughness of CDR Anderson.

Anderson, hard-bitten, lean and dynamic, had carefully thought out the possible tactics of the Viet Cong in an attack on his camp.

Anderson had been well schooled in struggles with adverse circumstances. In a previous deployment with a Seabee detachment to the Antarctic at McMurdo Sound, he had been grievously injured in a helicopter crash. A large part of his body had been painfully covered with third-degree burns, and his eyesight then completely gone. The doctors at the Bethesda, Maryland Naval Hospital, did not know whether the blindness was temporary or permanent, but the burns had seriously injured the tissue. Also, the injuries suffered in the crash had left him crippled. At first, the doctors at Bethesda told him that he would not see or walk again. He had one leg in traction and burns covered 40 percent of his body.

The doctors made eight operations, and between operations, Anderson (then a lieutenant) exercised as much as possible, first with a stroller, and then, as his eyes improved, walking in the streets of Arlington. Before the last operation was done, he was walking four miles a day and swimming nearly a mile at the hospital pool.

Anderson assigns much of the credit for his remarkable recovery to the plastic surgeon who conducted his facial and leg operations. Anderson recalled: "This Doctor Connoly said: 'There's more to medicine than a roll of pills and cutting with a knife . . . it depends on what *you* want to do to a great extent, rather than what I can do for you.'"

That small lecture early in his Bethesda history did much to establish Anderson's will to recover.

When Anderson came to Vietnam as CO of the 9th Battalion, he was ready for anything, and that night of October 28th, just about everything *did* happen.

An after-action investigation showed that the raid was made by guerrillas who came from Laos, probably North Vietnamese infiltrated through the Ho Chi Minh Trail. Where the raiders collided head-on with a well-placed machinegun position manned by Marines on the north side of the Marble Mountain Air Facility, the whole raiding party in that section, 16 men, were shot down as they advanced. Their wristwatches were set for Laotian time.

The largest part of the raiding party was concentrated to the southwest of the Marine Air Facility and this group broke through the Marine perimeter and blew up a line of helicopters. They then

ran through the quonset structures which were the initial increment of the hospital buildings being assembled by the Seabees. This group was successful through their whole line of attack, and stopped long enough to throw satchel charges into many of the hospital buildings and slammed the doors for increased pressure and blast effect as they went.

On the northwestern flank, the raiding party smashed through the Marines until they hit into the Seabee camp. A machinegun position was well set up with a field of fire to repel them. From this position, Builder Arlen S. Jenks, though badly hit by a 7.62 bullet in the foot, worked with the gunner to keep the gun firing for 45 minutes during the attack. The gunner, Builder Third Class Ray A. Hansen, was also seriously wounded, but kept his weapon firing. The heroic assistance offered by this machinegun position blunted the enemy attack.

The bulk of the casualties among the Seabees was from the initial 60mm mortar and machinegun barrage. More than 20 of the first mortar rounds pitched into the officers' quarters and also exploded among the enlisted mens' hardback huts nearby. Two enlisted men died as a result of this mortar barrage—SD3 Restituto P. Adenir, and Builder Second Class Donald D. Haskins. Subsequently, Seabee were named after these men.

Also hit in that first mortar assault were six of Anderson's officers, LTs Franklyn J. Hartman, Stephen F. Shady, Richard L. Schultz, Lee R. Bohning, Louis E. Vann, and F. C. Layng, the dentist.

CDR Anderson had been very thorough in his preparations for a Viet Cong attack. He'd ordered his men to clear the underbush around the area so there would be those good fields of fire which came in so handy. The work on the hospital had been subject to frequent VC sniper fire, generally from the direction of the nearest village, My Thi, and the men rehearsed enthusiastically in the critical business of getting to their fighting bunkers in minimum time.

Anderson recollects the start of that attack: "The first thing that I remember was waking up. Something slapped me in the leg, which later turned out to be some pieces of shrapnel. . . . The first thing I did was roll off my bunk and reach for my Piss Pot (helmet) and couldn't find it in the dark, and reached for my boots and they weren't there, so I said to hell with it. These things (mortars)

started falling all around and I could see big exploisions across the road.

"I could see Hueys going up, wow—way up in the air, the flames going everywhere. So I just dove head-first out the door to the ground and lay there for a minute, kinda looked around. There were tracers coming right through the camp. These guys (the enemy) had set up two machineguns north of the camp on a slope towards us, and they had an inter-locking field of fire going right through my camp. That's what caused a lot of casualties. I saw all this stuff and I jumped up and started running toward my CP (command post) because I was afraid they'd come through the fence. . . . It looked as if they were hitting us with both (mortars and machine-guns) and would be coming through the fence.

"So I ran to my CP and got about half way there, I was in the middle of the street and a (mortar) round went off right behind me. It's hard to remember what happens in a situation like that, but one of the guys was just sticking his head out of the CP and he saw me kinda go ass over teakettle into the ditch. And I'm just damn lucky because all I got was a few little pieces . . .

"They (the Viet Cong) had us psyched right out. I'm sure their intent was: 'Okay, we'll knock out the leadership of these guys and then we'll knock out this one bunker and get through the wire and just go around throwing these concussion grenades, and stick our assault rifles in the doors and shoot these guys!'

"But our guys responded so fast with their machineguns. The ones that didn't get hit were firing in three or four minutes, putting some counterfire on those machinegun positions—you know, almost immediately. So that screwed up their (the enemy's) timetable."

The raid on the Marine helicopter base was very successful for the enemy. They destroyed seven troop-carrying helicopters, and there were 42 Marine casaualties.

The major raiding party struck the helicopter field then charged through the Seabee's hospital to the southwest and had an easy time getting through it, for there were only four Seabees on duty there.

These four nightwatchmen followed a practical expedient: They set up a defensive position in a hole facing out with fields of fire in four directions and tried to shoot up the VC as they came rampaging through the hospital grounds.

This main raiding party withdrew to the south, and on the

north side, where they had taken their heaviest casualties, the "body snatching" wave of the assault group was busy pulling out their wounded and dead, an operation which they generally carried out very well. They did here, too, but in this case the 16 Viet Cong caught by the two Marine machinegunners were too close-in. These bodies, for once, were left behind.

To the north of the Seabee camp, where gunners Hansen and Jenks blunted the assault, the usual withdrawal signs were left by the phantom enemy: Drag-marks in the ground as the wounded and dead were pulled away, and pools of blood where the body snatching wave stopped to catch their breath.

Since it was the first action for the troops involved, a good deal of nervous fire, machinegun and M–14, was grazing around the vicinity, some of it covering-fire from the enemy's 7.62 automatic weapons as they made their withdrawal move. Fires were still raging along the flight line of the Marine helicopter facility and in the wreckage of the bright new quonsets in the hospital area. And as the Marines and Seabees collected their dead and wounded, many distressed shouts for "Corpsman!" and the usual battlefield cries of surprise, rage and fear as the injured men began to discover the extent of their wounds.

In the Seabee camp, the Navy medical lieutenant, H. M. "Doc" Henry was at his emergency aid station and was assisted by F. C. Layng, the dentist. Both were cited later for their coolness in carrying out their medical aid with various kinds of discouraging rifle and machinegun fire flying around.

The casualties among the Seabees were heavy. GEN Walt, the III MAF Commander, later awarded 93 Purple Hearts.

The Viet Cong had completely destroyed three receiving wards, the surgery ward, the x-ray room, and the laboratory. Other buildings were damaged, but not destroyed.

The next day, after the hectic night's action, Anderson gave the Seabees the morning off. But that noon, they pitched right in to clean up the damage. They not only went to work that very day to make up for the lost time, but they eventually managed to finish the first unit of the hospital by the scheduled delivery date.

This was despite the fact that the Viet Cong tried again with a heavy (81 mm) mortar attack, in January. But this time, perhaps discouraged by the combative reception the Seabees had given

them the previous time, and by the lively reception of machinegun and M–14 fire spraying in the direction of the mortar fire, the enemy assault troops never showed up in the barbed wire in the fringes of the Seabee camp.

LT Henry again behaved with coolness and distinction as the enemy mortars fell, and the Marine wounded were brought into his dressing station. This time, in the tension and excitement of that early morning attack, he saw that he had to perform a last-ditch emergency operation on a dying Marine whose heart was stopping, with the aid of NMCB–9's chaplain, LTJG Robert S. Collins. After the Marine had suffered a heart stoppage for the third time, Doctor Henry made an incision in his chest to give him direct heart massage. Chaplain Collins held open the incision and Doctor Henry started the heart functioning by massage with his right hand. When the patient's breathing began to fail, Doc Henry, using his left hand, performed a tracheotomy and restored breathing while he was also continuing to massage the enfeebled heart.

A MedEvac Huey helicopter arrived in the massed glare of truck headlights parked to form landing lights. The wounded Marine was loaded onto the chopper which would shuttle him to the nearby Navy Hospital, where he could be given more complete medical care. Dr. Henry walked beside the stretcher, still barefoot, and continued to massage the patient's heart until they arrived at the hospital. But, despite all these heroic measures, the Marine later died of his wounds.

Again, the Battalion pitched in to straighten the damaged quonsets, and retrieve whatever was salvageable in the way of materials. Before dawn they had again started to rebuild the damaged parts of the hospital.

In summing up that outstanding performance by his Battalion, Anderson said: "They went back to work madder than hell, every one of them madder than hell, because they'd (the enemy had) torn down their hospital, and they went to work with a passion."

Before the first phase of the building operation had been finished, and less than a month after the first big NVA raid, NMCB–9's camp was officially dedicated as Camp Adenir, after one of the two Men of Nine who were killed during that night attack. The dedication date was November 21st.

On the day of the dedication of the hospital, CDR Anderson was

awarded the Silver Star Medal by ADM Roy L. Johnson, CINCPAC FLEET, for "conspicious gallantry in action."

Later, the Bronze Star with Combat "V" was awarded to Builder Third Class Ray A. Hansen, Builder Arlen S. Jenks, and Constructionman Sydney L. Sutton, by GEN Krulak, for their courageous and effective machinegun fire which held back the assaulting enemy force trying to break into the Seabee camp from the north. The overall supervisor of the machinegun teams in this area, Builder First Class Leo B. Burkhart, was awarded the Navy Commendation Medal with Combat "V".

Another Bronze Star was awarded to Seaman Michael L. Palaca, for having rescued a wounded man in the course of the night's action. Like the others mentioned above, Seaman Palaca also had been wounded by a mortar round.

A Navy Commendation Medal was awarded to the battalion doctor, LT Harvey Henry, for "heroic achievement . . . when the camp came under heavy Viet Cong mortar and machinegun fire."

LT Frank C. Layng, Jr., the dentist of the Battalion, was awarded the Bronze Star. The citation stated that although wounded, "he exposed himself to enemy fire to make his way to the medical aid station to assist in the treatment of other wounded personnel."

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By the Fall of 1965, 4 Seabee Battalions were operating in Vietnam and the Marines were asking for still more. NMCBs 4 and 8 had been moved to Port Hueneme and were transferred to the Pacific Fleet. It was apparent at the rate the requirements were developing that all of the Atlantic Fleet Battalions would also be required in order to satisfy the requirements. The deployed Battalions were returned to Davisville and were prepared for deployment to Vietnam.

Simultaneously, the Naval Support Activity, Da Nang, which had been established in July 1965, was calling for more and more Seabees to maintain and operate the facilities around Da Nang.

The Seabee battalions deployed to Vietnam for 8 months followed

by a 6 months' period in homeport for leave, training and preparation for the next deployment. This basic cycle had been well tested in peacetime and had been found to be far superior to leaving a Battalion homeported overseas and rotating the personnel in and out. At one point, the personnel planners in the Navy Department, however, felt that personnel rotation in lieu of unit rotation would be more effective and that it should be instituted. Personnel rotation was the practice of almost all other units based in Vietnam. However, the advantages of unit rotation, such as complete training of all personnel as a working team back in homeport—low personnel turnover during deployment—Battalion espirit de corps, higher productivity and the continued capability of a battalion to rapidly mount out to meet another contingency, were felt by the Seabee staffs to far out-weigh other considerations. The unit rotation policy was agreed to by CNO.

With 10 NMCBs in commission, this rotation cycle limited the number of Battalions in Vietnam to 6 at a time. This did not satisfy the increasing requirements. Consequently, CNO authorized 4 new NMCBs with establishment dates of February 1st, March 15th, July 1st and August 15th, 1966.

One of the most difficult problems to be solved was getting enough Petty Officers to fill all the new requirements. The 5 Pacific Battalions were manned at approximately 595 men each. Four of the Atlantic Fleet Battalions were staffed at 450 men and the other one had 220 men. All of these battalions had to be built up to their new complement of personnel. Additionally, the new requirements for Seabees at NSA Da Nang and for the 4 newly authorized battalions greatly compounded this personnel problem.

Finding unskilled recruits was not difficult; however, finding enough Petty Officers to meet the new demands was a far more serious problem. As a result, Seabee Petty Officers serving in duties ashore throughout the world were ordered to battalions and to NSA Da Nang months ahead of their normal rotation time. Some of these stations were supplied with men with closely related skills from other parts of the Navy as replacements, but most stations had no replacements at all for many months.

To further help solve this pressing problem, at the request of BUDOCKS Chief, RADM Husband, BUPERS authorized, on January 3, 1966, the direct recruitment of skilled construction

workers as Petty Officers in the Seabees. This type of recruitment had very successfully staffed the Seabees originally in 1942 and it was hoped that it would do so again. Workers with two years of trade experience could be recruited as a Third Class Petty Officer; four years experience as a Second Class Petty Officer; and seven years experience as a First Class Petty Officer. Even a few Chief Petty Officers were recruited under this program.

CAPT Blake Van Leer, Assistant Chief of BUDOCKS for Military Readiness, addressed the annual meeting of the 18-member Building Trades Council at the Washington Hilton Hotel in early 1966—soliciting, and getting, union support for this program. An original quota of 3,050 men was set, which very shortly thereafter was raised to 4,950. The program was closed six months later, as all quotas were completely subscribed, the program having exceeded the planners most optimistic thoughts.

These new recruits were sent to the Construction Training Unit at Davisville, Rhode Island, where they went through one week of processing and four weeks of training before being sent to their commands. This program was known as the Direct Procurement of Petty Officers (DPPO) and these petty officers were informally called IPOs, "Instant Petty Officers". These men proved to be as successful as their predecessors in World War II had been and provided that extra craftsmanship skill and supervision so necessary as the Seabee force expanded so rapidly. The program was reopened in the spring of 1967 to provide another 10,000 petty officers as replacements.

An associated problem of the Seabee buildup was the requirement for homeporting berthing and training facilities. The load at the Construction Battalion Center, Port Hueneme, jumped rapidly when NMCB 4 and NMCB 8 were transferred from Davisville to Port Hueneme. All the battalions were increasing in size and the number of students at the Naval Schools, Construction, Port Hueneme, was increasing drastically to a maximum on-board load of 2,000 students. At times, barracks at NAS Point Mugu were used to berth NAVSCON students. The plans at the CBC, Davisville, to increase the three remaining battalions to 563 men, to commission NMCBs 40 and 58 there, and to locate the DPPO training there quickly overloaded the Center and necessitated some of the Seabees being berthed at NAS Quonset Point. Fortunately, the CBC at

Gulfport, Mississippi, had been retained as a mobilization base at the end of World War II. BUDOCKS made an urgent study to determine in what way this facility could be used to the best advantage of the total Seabee system.

Consideration was given to moving NAVSCON from Port Hueneme to Gulfport to free space at Port Hueneme for additional battalions. However, the time and effort required to construct adequate schools at Gulfport and the lost time in moving the school there during the time that the demand for trained men was so high, dictated against the moving of the school. Subsequently, on February 21st, CNO directed the reactivation of Gulfport. The third and fourth battalions to be established, NMCBs 62 and 133, were assigned to Gulfport. On March 1st, 50 advance men from NMCB 62 arrived to start putting things in order.

The Atlantic Fleet and the Pacific Fleet Construction Forces were organized differently in 1965. The Commander of the Pacific Fleet Seabees and his staff were stationed at the Pacific Fleet Headquarters in Hawaii and the battalions were homeported in Port Hueneme. While the battalions were in homeport, they reported to the Officer in Charge of a Construction Battalion Base Unit for administration, training and support. In the Atlantic Fleet area, COMCBLANT flew his flag at the Battalions' homeport of Davisville. Although there was a CBBU at Davisville to take care of transient personnel and to provide support, the Seabee battalions reported directly to COMCBLANT while they were in the homeport. The Construction Battalion Centers at Port Hueneme and Davisville, as landlords, provided support to the battalions, but the Centers and Battalions had no common boss until the chain of command worked back to CNO. There were conflicts between the battalions and Seabee staffs and the Centers which were difficult to resolve. With the forthcoming establishment of new battalions at two homeports and the intensive training necessary to ready all of the battalions for Vietnam duty, this homeport command structure was restudied.

In order to get the CBLANT staff out of the everyday detail, to provide the necessary organization at Gulfport to organize and train the new battalions, and to provide for uniformity at all Construction Battalion homeports, CNO directed the establishment of a Construction Regiment at each homeport and the dis-

establishment of the two CBBUs. The Commanding Officer of each Center was given additional duty as Commander of the Regiment at his location. The Commanding Officer of the CBC at Davisville was made Commander of the 21st Regiment on 1 April. On April 12th, the Commanding Officer of CBC, Gulfport, was made Commander of the 20th Regiment, and as such, reported to COMCBLANT for additional duty. The Commanding Officer, CBC, Port Hueneme, was made Commander of the 31st Regiment on May 18 and reported to COMCBPAC for additional duty. The regimental concept at each homeport turned out to be very successful in supervising the homeported battalions and in the marrying of the Construction Battalions and staffs and the Centers that supported them.

As the war progressed and more troops were sent to Vietnam, the need for more Seabee battalions arose. Even before the fourth new battalion, NMCB 133, had been established, the fifth and sixth new ones, NMCB 71 and NMCB 74, were authorized, and before these were established, two more and then a third, NMCBs 121, 128 and 53 were authorized. The need for more Seabee maintenance people in the Northern I Corps and in the southern part of the country led to the establishment of CBMUs 301 and 302 on March 31st, 1967.

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To return to the early Seabee deployments, NMCB 3 under CDR J. D. Rumble arrived at its Hill 327 site from Guam on May 26, 1965, as the second Seabee Battalion to serve in Vietnam. Since the battalion had already been deployed approximately eight months, its first Vietnam exposure was short—only four months. They were relieved by NMCB 5 under CDR W. F. Russell on September 25th. Three's primary job in those early days was to start work on a vital road project at Monkey Mountain.

NMCB 9 relieved NMCB 3 on its departure on the tough job of building a road between two peaks of Monkey Mountain at the northern end of the East Da Nang Peninsula. The contractor, as one of his first jobs, had already built the road to the top of the North

peak. The Seabees' job was to build a road between that peak and the South peak.

By the time the Seabees had finished, they had removed approximately 200,000 cubic yards of house-sized boulders and earth from an anti-aircraft battery site at the top of North Peak. And they had cleared and dug their saddle road straight up to that peak, sometimes with grades as steep as 15 percent.

The Men of Nine fashioned emergency culverts to keep the road open even at the worst of the rainy season. It was workable for jeeps and other military vehicles, but for hauling freight to the top, CDR Anderson relied on tracked flat-bed trucks called Athey Wagons, which the Seabees had used with great success to haul supplies and equipment around the hilly wastes of Antarctica.

Anderson recollects, about that Marine LAAM Station on Monkey Mountain: "Up on top, we built them a camp, we built them a missile work shop up there, put the road up and everything else."

Anderson went on: "There were a lot of people who said we couldn't do it. I understand GEN Westmoreland came up and rode around in a helicopter one day and said, 'That's the job they told me couldn't be done.'

"That made us feel kinda good. It made GEN Walt feel kinda good, too, because the Seabees were one of his outfits when he was Third MAF Commander."

One of the most famous of Seabee legends to come from Vietnam concerned this early bit of road building. One day as two tough Seabees of NMCB–9 were working with a dozer on the top of Monkey Mountain, a shiny Huey helicopter came fluttering down and landed next to them. Out stepped a short, very tidy general with three stars on the collar of his Marine Greens, and a mirror-shine on his combat boots, LT GEN V. H. "Brute" Krulak, the overall Pacific commander of Marines in the Pacific, FMF PAC, Pearl Harbor.

Here is Krulak's account of this story: "The finest place for a missile battery was the top of Monkey Mountain, but the top of Monkey Mountain was about the size of a desk. It had to be made big enough, and there was no way to get there except by helicopter.

"The Seabees were helicoptered up there and with explosives they gradually made a big enough place for a helicopter to land, and then

two helicopters to land, and so forth. So finally, the top of Monkey Mountain was flattened off in the magnitude of maybe 15 or 20 acres-room for the LAAM (Light Anti-Aircraft Missile) and radar computers.

"I went up to Monkey Mountain at a time when you could get one helicopter, very gingerly, on the ground. There were just two Seabees there, living with C-rations and TNT. I asked one of them—they were working stripped down—if there were any monkeys there.

"He said, 'Oh, yeah. There are a lot of them.' And the other one said: 'And some of them are very big.'

"And then the first one said: 'As a matter of fact, the only way you can tell them from us is that we're the ones with cigars.'"

From this came the finished lines in the Seabee legend which has become a by-word amongst Vietnam building veterans. According to this version, GEN Krulak asked the Seabees on the top of Monkey Mountain: "How do you tell the Seabees from the monkeys?"

"No problem, sir, the Seabees are smoking cigars."

* * * * *

The Teams from these newly deployed Seabees battalions conducted operations in Thailand and Vietnam with the usual distinction of the Seabee Teams.

Especially commended was Team 0907, under LTJG Richard D. Truman, deployed to Phan Rang, a coastal town at the edge of Ninh Thuan Province supporting civic action programs. On this deployment, 0907 proved that they had the same fighting spirit which so distinguished CDR Anderson's outfit during the big enemy attack on the Navy Hospital at East Da Nang.

Team 0907 relieved Team 0906, and continued their civic action works like up-grading 12 miles of new roads and bridges, a marketplace at Du Khanh, and built a new schoolhouse at Nhon Noi. The road and bridge projects tackled by 0907 were centered at two locations, Luang Tri and Karom.

It was near Karom that five members of a Medcap team were

setting out on the kind of out-patient jaunt which had done much to win friends in the area for 0906, when a band of 15 to 20 Viet Cong sprang an ambush on the two vehicles, a dump truck and a weapons carrier. Close to the village of Ba Thap, the convoy of two trucks was hit by heavy small arms and AK–47 automatic fire. The leading truck was shot through the tires and careened off the road into a rice paddy, and the second truck followed.

The corpsman, HM2 Kenneth M. Depriester, driving the truck, was thrown out the door by the impact. He ran to the front of the vehicle and there saw one of the enemy. He turned and reached for his M–14 automatic rifle, but as he reached for it, the weapon was smashed by a Viet Cong bullet. Depriester then whipped out his .45 calibre automatic and fired several rounds at the Viet Cong.

In the firefight, the two passengers in the back of the truck, EO2 Kenneth D. Turkle and E02 Richard J. Weber, were both seriously wounded. The driver of the other truck, CE2 John W. Cassidy, crawled about 300 yards from his truck, and saw two Viet Cong between him and the other Americans.

Constructionman First Class Frederick S. Whaley, was pinned down inside the cab. He tried to crawl out, and was lying on his back, crawling towards the running board when he saw a gun in his face. A Viet Cong was standing beside the running board of the truck. A struggle ensued and Whaley shot and killed the VC.

A firefight was joined between the Viet Cong, close around the truck, with Depriester firing with his .45 pistol and Whaley with his M–14. Whaley heard Equipment Operator Kenneth D. Turkle shout from outside the truck: "Hey, the VC are in the road!" Whaley cleared a jam in his M–14 and stood up beside the truck. He saw a Viet Cong, in the rice paddy. Whaley fired at the Viet Cong with his M–14, and was certain he had killed the enemy. He ducked back behind the weapons carrier and found Weber there (EO2 Richard J. Weber), and he fell next to him as he saw a Viet Cong grenade splash close to Weber's head in the mud. Whaley pulled Weber away from the grenade and stuck his own face in the mud for protection.

The grenade went off, striking Weber. After the explosion, Whaley heard two of the Viet Cong talking on the far side of the roadway, beyond the weapons carrier. "Doc" Depriester came around the front of the truck and Whaley told him that Weber

was hurt. Whaley and Turkle moved to Weber and tried to patch him up with first aid.

A civilian bus, one of those brightly painted and antiquated public conveyances that people the roads of Vietnam everywhere, came trundling up, and the Seabees' interpreter ran up to them and asked for help. But they drove off, apparently intimidated by the sight of the casualty, even though the Viet Cong force had evidently been driven off by the determined fire of the Seabees by this time. A few minutes later, an Army weapons carrier arrived on the scene.

The weapons carrier stopped, with 7 or 8 soldiers in it. They unloaded the truck and unhooked their trailer. Two of the Army men went to the dump truck to search for Cassidy, and from the rice paddy the Viet Cong fired about four rounds. The soldiers on the road returned the fire. The Seabees got the truck back on the road, turned it around, and placed all of the Seabee survivors in it, except Cassidy who was still missing, and they headed the truck back towards Phan Rang.

By this time, the Viet Cong were nowhere in evidence on the road, but Cassidy, out 300 yards from the road to the south, could see them moving in the paddy between the road and him. He had the nightmarish sensation of seeing them moving between his position and the road, then seeing the U.S. white-starred Army truck move off in the direction of Phan Rang without him.

Cassidy worked his way back to the road, around the Viet Cong, spotted another Army truck coming along the road, and decided to jump up and flag it.

The Army truck took Cassidy to Ba Thap. He was uninjured. Turkle, Weber and Depriester were taken to the hospital in Phan Rang and Turkle and Weber were air-evacuated to Nha Trang that same day, February 10th, 1966.

Turkle, Weber and Depriester were later awarded the Purple Heart, and Depriester was given the Bronze Star with Combat "V". The citation said: "After aiding in thwarting the enemy attack, Depriester unhesitatingly exposed himself to enemy fire to administer medical attention to his fallen shipmates. With complete disregard for his own personal safety, Depriester made three trips from a protected area to the exposed position of a wounded shipmate to tend his wounds."

At that time, there were eight Seabee Teams in Vietnam, and two in Thailand: Teams from NMCBs 3, 5, 8, 9 and 10.

The intrepid Seabee Teams of NMCB–5 had typical assignments. They were plunging into the country environment so frequently riddled with Viet Cong hostile maneuverings, and doing their good works to win good will for the American forces. Those good works included the usual gamut of primitive roads, bridges, wells and schools, and the ambitious but almost always effective programs to bring medical treatment to the country people through Medcap sessions.

Team 0507 deployed to Tuyen Duc Province, where the local farmers were very anxious to have a bridge across the Da Nhim River, so that they could truck their produce to the market places on the other side.

The old honored Seabee maxim: "If you don't have it and can't get it, make it", was still Standard Operating Procedure. There were no pile drivers available in the vicinity of the Da Nhim River, and to root the bridge deeply enough for that swift stream, the only solution was to bed it firmly in a deep line of piles. With such a structure, the townspeople might be able to avoid the usual catastrophe of the annual rainy season. Their bridge, in the past, had always washed out.

EOC Don Agent came up with a good Seabee-type idea: to make a homemade pile driver with a borrowed ten ton crane, on loan from the Vietnamese 202nd Engineers. Agent worked with scrap steel, barbed wire picket stakes, and concrete; and he and SW1 Lloyd Edward Close began construction of Agent's Rube Goldberg brainchild.

The Team assembled the necessary pilings, the crane's engine began to stutter and thump as the first pile was set into position. The piledriver creaked and groaned as the hammer was lifted above the creosoted timber. It struck beautifully with a solid impact and the pile edged nicely into the mud of the river bank. Again, and again. Bang-bang, bang! Success! In all, 36 piles were driven into the river bed, to an average depth of 14 feet.

The Seabees fell to with the rest of the construction work, and soon finished the decking about 16 feet above the usual water level in the Da Nhim. Almost immediately, the structural strength of the new bridge was tested as hundreds of the little minibus

trucks, scooter-bikes with truck-bodies propped on their three wheels, and the cumbersome and classical ox-carts drawn by the mountainous grey water buffalos of Southeast Asia traversed the bridge. And when the rains came, for a change nothing happened to interfere with the farmers' access to their markets.

The Team's Medcap program was carried out with a similarly aggressive spirit, under the direction of the Team Corpsman, HM1 Larry E. Andrews. The six-foot, sturdy corpsman, better known to his Team members by the inevitable Service nickname, "Andy", said in summary: "It's like nothing I've ever done before. . . ."

When the Team reached Dran, HM1 Andrews found no medical civic action program under way. So he went out to the villages in the mountains and parleyed with the village chiefs.

With this thorough preparation, Andrews was able to establish a very successful schedule of sick calls. A Navy journalist, writing in the MACV OBSERVER newspaper, wrote about a typical sick call in the village of Ta Ly:

"After removing his flak jacket and rifle and placing them within easy reach, Andy dragged a homemade table into the village center. From a large, steel box he removed an assortment of pills, vitamins and bandages. A crowd assembles as he holds sick call in the shadow of the cross of the village (Catholic) church. He lances boils, dresses cuts and dispenses medicine (mostly soap, the miraculous cure-all so lacking in Vietnam).

"Andy explained that white and black pills are unpopular because they are unhappy colors for the Vietnamese. After giving his patients various colors of pills, he's seen them off to the side of his sick call area swapping them (the blacks and whites) for the colors they like best. He said they really like the red, green and blue pills best and have nicknamed them 'happy pills'.

"'I've been well accepted in this area by the local Vietnamese,' Andy commented. 'We've had various village chiefs come to the Seabee camp time after time wanting to know when we would be coming back to the villages. Once they begin to believe in you and what you're trying to do there's nothing in the world they wouldn't do for you.'" Andrews' record in Medcap performance was notable—even among the Seabee Teams. He treated more than 7,000 Vietnamese during the seven months Seabee Team 0507 was at Dran.

Another Team of this time span, 1006, was famous because it

spanned the transition from the primary mission of building Special Forces camps to a complete dedication of Seabee teamwork to civic action under USAID.

Up until this time, approximately the Fall of 1965, about half of the Teams had been concentrating on building Special Forces camps, and doing civic action projects only in their spare time. From the end of 1965 onward, the State Department took note of the fact that Seabee Teams had achieved outstanding results in building goodwill for Americans in civic action projects.

Team 1006, arriving in-country in August of 1965, relieved Team 1104. Two-thirds of the way through their deployment, 1006 and another Team which arrived at the same time, 1005, received change orders and were told they should shift to USAID-sponsored projects.

And 1006 achieved fame with an unselfish feat of people-to-people relations which exemplified the unselfish spirit of their construction effort. Their first USAID assignment took them to Tay Ninh, a wild and woolly Viet Cong area on the Cambodian border.

One of the pet projects of Team 1006 at Tay Ninh was building a wheelchair for a pretty Vietnamese girl who had lost both legs during a Viet Cong guerrilla attack on the city. Two Seabees of the Team, EO1 Herbert Sneed and CM2 Clinton E. Proctor, went to work with whatever scrap and bits of bicycles, angle iron and sheet metal they could locate, and built a serviceable wheelchair for the girl.

The chair was presented to her at the USAID building in Tay Ninh. Master Chief Journalist Tom Johnston, in his history of the Seabee Teams, commented on this heart-warming bit of civic action: "As she sat in it for the first time, the smile of pleasure that came to her lips and the look of gratitude that filled her eyes broke the language barrier. That was all the thanks needed by the Seabees of 1006."

As the Seabee Teams continued their deployments, their parent organizations, the NMCB's, were arriving in Vietnam in increasing numbers. One Battalion involved in a large scale change in deployment schedules was NMCB-8, which was moved from its home port at Davisville, Rhode Island, to Port Hueneme, and from the Atlantic Fleet to the Pacific in August 1965. That move was the

beginning of the buildup of the Naval Construction Forces, and the first shifting of an NMCB from the Atlantic to the Pacific. The Battalion deployed to Vietnam in September of 1965, to the Da Nang vicinity under the command of CDR P. A. ("Pap") Phelps. The Battalion's main jobs were constructing hospital facilities, headquarters and living cantonments and roads in the Da Nang military complex.

The second of the NMCBs to be transferred from the Atlantic to the Pacific Fleet was NMCB–4, which made the move from Davisville, R. I. to Port Heuneme in November of 1965. It deployed to Vietnam to relieve NMCB–10 only three weeks after quick refresher training at Port Hueneme, and was at Chu Lai before December was over. The CO was CDR Worthen A. Walls.

The job at Chu Lai included building a 24,000 cubic foot cold storage plant, construction of a 420,000 gallon fuel tank, more than 50 Butler buildings, cantonment area structures and a field medical station.

* * * * *

Underlying, or perhaps more exactly *overlying*, the agonizing efforts in the tropical jungles and the elemental struggle for life in primitive Vietnam were the administrative efforts to expand the Seabees and the Civil Engineer Corps to cope with the emerging construction program. This took place, of course, in the relative comfort of what the men in Vietnam called "the World", the "Big PX", that stretched from Pearl Harbor to California, Gulfport, Mississippi, Davisville, Rhode Island, and Washington, D.C.

Heroic individual efforts were being made to put the right people in the right place, to find the new officers and men required and to evolve the new command and support organizations needed.

The build-up of the Civil Engineer Corps was a prime necessity before anything else could happen in the building effort in Southeast Asia. Extra reservoirs of brain-power and human energy among the fast-expanding officer corps were of central importance as the

need grew in Vietnam. But the simple fact of the need had to be translated into an increase in numbers through a very complex chain of administrative mechanisms.

That military expansion effort did not strike the CEC hard until the spring of 1965. CDR Robert F. Jortberg, in early 1965 head of the CEC detail office in the Bureau of Naval Personnel, listed five of the key events that spurred that impact:

"(a) The growth in the contract construction program; (b) The creation of OICC RVN as a separate command; (c) The enlargement of the MACV staff; (d) The creation of Naval Support Activity, Da Nang; (e) The decision to form four additional (Seabee) construction battalions."

The resultant increase in officer personnel in the CEC was succinctly described by CAPT C. M. Howe (who had relieved CDR Jortberg in 1966), in 1972, the CO of the (Navy) Civil Engineer Corps Officers' School (CECOS): "The long leadtime in selecting college graduates for Officers' Candidate School and the processing of them through OCS caused the CEC on-board strength to be always behind the 'power curve' during the Southeast Asia build-up . . . we did strip down the shore establishment to supply officers for Vietnam.

"It was difficult freeing enough commanders and captains to staff all of our requirements, but the real crunch came finding enough lieutenant commanders, lieutenants, LDOs and warrant officers as more and more battalions were authorized and the requirements for other Vietnam billets escalated.

"A few reserve officers volunteered for active duty and a few civilian engineers did accept a direct appointment to commissioned status, but this supply was only a token satisfaction of our additional requirements for mid-range officers.

"As a result, many of the lieutenant billets, and even a few of the lieutenant commander billets . . . were filled at times by officers fresh out of CECOS.

"The Civil Engineer Corps Officers' School, (then) under CAPT Jack Beaver, did an outstanding job meeting this increased workload in the indoctrination of new CEC ensigns. The workload increased from 195 basic graduates in FY (Fiscal Year) '65 to 551 in FY '67. . . . It was a fact, however, that until we reached the crest of the Vietnam requirements, we were always sending over more

experienced officers than were coming back. And the problem of lack of experienced officers in the shore establishment kept getting progressively worse."

And this growth of the Civil Engineer Corps was to prove to be of even greater importance as the need for CEC officers continued to mushroom not only for Seabee Battalions but for the OICC, MACV and for the Naval Support Activity Da Nang. We will see how this need grew with the constantly increasing demand for more construction, repair and maintenance.

CHAPTER TWELVE

The New, Super-priorities

In August, 1965, for the first time a Civil Engineer Corps officer of flag rank, RADM William F. Heaman, came to Saigon to serve as the OICC.

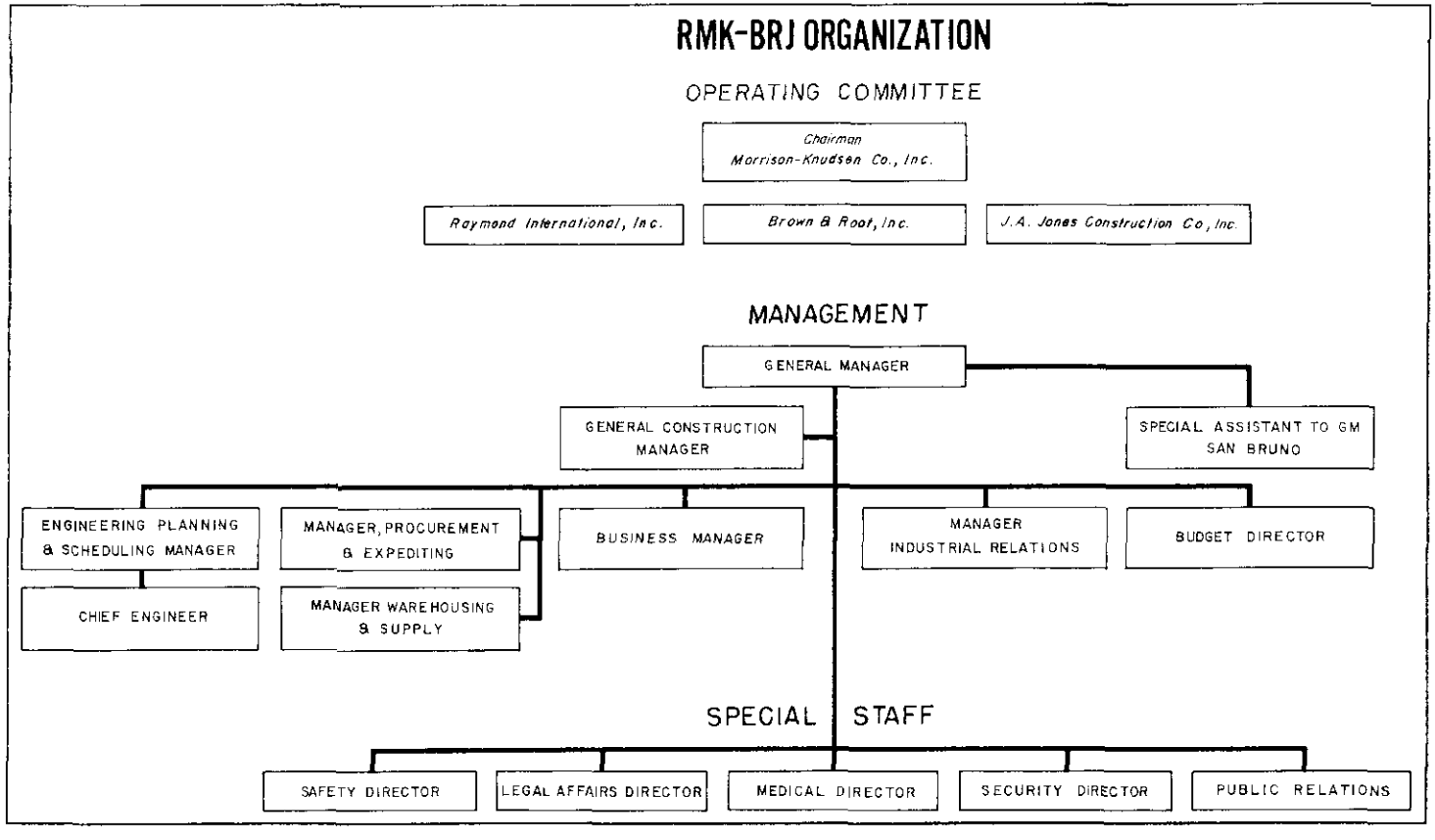
The towering Heaman (like many BUDOCKS leaders was an imposing, super-sized man) brought with him more than a clue of similarly king-sized plans for military building. RADM Heaman was to serve as OICC for a short period, until December of 1965 when another admiral, RADM Robert R. Wooding, came on a permanent basis. Heaman had recently been appointed to relieve RADM J. R. Davis as the Director of the Pacific Division, BUDOCKS, and was to serve a short period in Vietnam to gain a personal knowledge of this critical effort. Davis was to retire after 32 years of service.

PACDIV of BUDOCKS, in charge of the Navy's building operations in the entire Pacific Area, supported CINCPAC, ADM Ulysses S. Grant Sharp, at Pearl Harbor while under the command of BUDOCKS.

The final arrangements for enlarging the consortium in Vietnam (by adding BRJ) were signed at the San Bruno office of the Bureau of Yards and Docks on August 12th, 1965. The effective date was August 3rd. Raymond Jones, of the J. A. Jones Company and Howard Payne, senior group vice-president of Brown and Root, had flown in, from the east and south U.S.

Practically as soon as the ink was dry on the agreement, J. A. Jones and Brown and Root began a high powered drive to recruit personnel for the burgeoning program in Vietnam.

The director of the recruiting effort for the J. A. Jones Corporation in that early and critical era was Richard Lee, the industrial relations manager of J. A. Jones. Later, Lee became vice president. He recalls, about those frantic days: "We were initially thinking of


RMK-BRJ ORGANIZATION
OPERATING COMMITTEE
Chairman
Morrison-Knudsen Co., Inc.
Raymond International, Inc.
Brown & Root, Inc.
J.A. Jones Construction Co, Inc.
MANAGEMENT
GENERAL MANAGER
GENERAL CONSTRUCTION MANAGER
SPECIAL ASSISTANT TO GM SAN BRUNO
ENGINEERING PLANNING & SCHEDULING MANAGER
MANAGER, PROCUREMENT & EXPEDITING
BUSINESS MANAGER
MANAGER INDUSTRIAL RELATIONS
BUDGET DIRECTOR
CHIEF ENGINEER
MANAGER WAREHOUSING & SUPPLY
SPECIAL STAFF
SAFETY DIRECTOR
LEGAL AFFAIRS DIRECTOR
MEDICAL DIRECTOR
SECURITY DIRECTOR
PUBLIC RELATIONS

(only) 60 to 100 supervisory personnel—managers, supervisors, engineers and office people. But as the tempo of the project increased, J. A. Jones recruits soon numbered over 1,000.

"The first thing we did was to contact our former employees. We sent out letters to 800 such employees, and we got out bulletins to our current employees so they might be released for the Vietnam assignment.

"We brought on (George) Hickman, (Ronald) Sullivan and Jim Stanley with the assistance of ten or so clerical people. We swept through the Southeast states—Mississippi to Kentucky, Virginia to West Virginia. But the most productive areas turned out to be Florida and North Carolina. In terms of numbers, North Carolina (the home state of the J. A. Jones Corporation) was the most productive.

"And I must say, and proudly, that we had much less turnover than the next highest contributing contractor—25 percent less. One reason for our high level of retention was that in the South, a more moderate income area than the North or Northeast, the monetary inducements of the jobs were more significant.

"We used the state employment offices in all the states, and we set up in hotels for after-hours recruiting. We couldn't get the professional engineering men to attend the group interview sessions at the state employment offices, so the after-hours interviews were beneficial. And also there was less danger of being observed by other members of the same company where they worked."

Lee said that, in the first days of the partnership of Jones with the others of the consortium, the recruiting was easier, because the best of the construction foremen and supervisors were available. He summed it up: "At first, when we had been drawing on current and former Jones employees, we had the cream of the crop.

"Many of the people came from previous or current overseas projects, including the Iranian Military Base Program. Some of these went directly to Vietnam. The same with an Afghanistan road-building job.

"As the applicants became less familiar with overseas work, the number of terminations increased. For those who had worked in Baghdad, Saigon was not so much of a shock. But for many who had never been to Asia, it was quite severe.

"As the labor market grew shorter, we found that some of the recruits were those with family or personal troubles. They were anxious for some kind of escape. But those who were dissatisfied had a harder time with the unexpected difficulties of being in Vietnam. They didn't like the living conditions, the food, or the leadership. Or the guns were too close."

Lee said, however, that as time went on, even the new recruits, if they made it the first six months, found particularly interesting aspects of working in Vietnam. They had no overtime, they were expected to work ten hour days, seven days a week, but most of them were particularly impressed with the feeling of accomplishment in the combat zone. They knew that the job was something really important—something with teeth in it, and that they were part of the greatest construction job in history.

Yet the real shortage of labor had not been felt as of the time that Secretary McNamara made his November 1965 visit.

* * * * *

One of the little noted large achievements of the Seabees and CEC officers during the swiftly rising increases in American servicemen in Vietnam in 1965 was the thankless job of building up the housing capacity and caring for such mundane necessities as utilities support for the U.S. installations in Saigon during that year.

This "landlord" or "Public Works" job which included transportation, maintenance and utilities, was handled by the Navy's Headquarters Support Activity (HEDSUPPACT). The HSA Public Works Department was comprised of Seabees and Vietnamese civilians with a small U.S. civilian group.

Captains James Connor Young and Samuel C. Gill, Jr., were the Public Works Officers in this HEDSUPPACT operation. In late 1965 and early 1966, the Army gradually assumed the maintenance and support functions under the First Logistics command, and a newly established Naval Support Activity was slowly brought into being in Saigon, with the reduced mission of supporting only the U.S. Navy.

In the early days, the Navy was responsible for providing country-

wide administrative and logistics support to the MAAG (Military Assistance Advisory Group) in Vietnam. This was the mission of HEDSUPPACT Saigon.

In view of the fact that most of the military personnel in-country were Army, ADM Sharp, after consulation with the Services, made the decision in September 1965 to transfer common support functions from the Navy to the new Army First Logistics Command. The final transfer was on 17 May 1966. At that time, NSA Saigon was given responsibility to support Naval activities in II, III and IV Corps (all of Vietnam except I Corps).

During this year of expansion, several severe terrorist bombings injected extra maintenance and repair work into the schedule of the public works Seabees.

One such severe bombing was at the Metropole Bachelor Officers' Quarters on the main road to Cholon, the Chinese quarter in west Saigon. Nearly 100 Americans were injured in this explosion, and two were killed as the Viet Cong followed their traditional pattern and drove a dynamite-laden auto directly under the BOQ structure.

After the large-scale mortar and rocket attack on Pleiku in February, 1965, the American dependents who had been living in Saigon were all sent out of Vietnam. While this was a grievous personal blow to many of the service personnel in Saigon, it did have the beneficial effect of increasing the number of living spaces available in the Saigon vicinity.

In mid-1965, GEN Westmoreland had appointed a temporary chief of construction and construction planning on the MACV staff, and the bulk of his conferences on the growing requirements for a building program were with this officer, Army Colonel Daniel A. Raymond. COL Raymond had been on the staff of MAJ GEN Jack Crowley, then the Chief of Supply and Logistics, or J-4, on the MACV staff.

Both Raymond and Westmoreland knew that the success of the logistics island concept depended on the rapid completion of an unprecedented amount of construction and the Services were directed to define their requirements so that the full program could be put together and the necessary funds requested. But this caught both the Navy and Army with very small facilities planning staffs in Vietnam and the progress on deciding upon what was needed was painfully

slow at first. The Air Force, however, did particularly well and produced a comprehensive plan of its requirements quickly. MACV also told the OICC to get ready for something big—the full size was not yet certain—but everyone was certain that the previous construction efforts would be dwarfed by what was to follow. OICC and RMK-BRJ planners once again re-thought their plans for a rapid increase in the contract capability—how would they find the labor force, the supervisors and the equipment and materials needed for the yet undefined urgent program. Where would they work, what depots and camps would be needed and how soon could they get a handle on the specifics of the program so they could start ordering the wherewithal? This was the state of things in November 1965 when Secretary McNamara arrived in Saigon.

The Defense Secretary arrived in the usual high-powered company, in this case the Chairman of the Joint Chiefs, GEN Earl G. Wheeler, and the CINCPAC (Commander-in-Chief, Pacific) ADM Sharp, whom he had picked up in Pearl Harbor.

Of course, the Secretary was concerned not only with the expansion of the building program, but the enlargement of the whole of the war effort, with all of the "J" staff members involved—Operations, J-3 in the premier place, but with Intelligence, J-2, and J-1, Plans and Policies also figuring prominently.

Feverishly involved in the building discussion was a Special Assistant on the staff of RADM Heaman.

That Assistant was CDR Richard C. Williams, an incisive mentality who had arrived in Saigon in August. He had served for three-and-a-half years on another big-push BUDOCKS program, the Spanish bases, a $300 million effort.

The Secretary was especially annoyed at the many overlapping and conflicting priorities for the favored projects of the various Services. And also, he was especially bothered at the glut of ocean-going ships lying off the mouth of the Saigon River at Vung Tau, waiting for their chance to come up-river to the one and only workable deep water port. The reason that they waited here, piling up millions of dollars worth of demurrage, was not only that the port facilities were so limited in the Saigon waterfront, but also that they were afraid to risk anchoring in the river for fear of being sunk by swimmer-sappers of the VC. One U.S. aircraft ferry, loaded with

helicopters, the CARD, had already been sent to the bottom while at the Saigon docks by these tactics (May 2, 1964).

Shortly after the Secretary arrived, COL Raymond summoned CDR Williams urgently. Williams remembered that day long afterwards. Raymond said: "You'd better get over here. We've got something to do."

Williams lost no time reporting to the J–4 offices at MACV headquarters. Soon he was closeted with Raymond to work out a construction program for the slick-haired, lean man who had briefly served as President of the Ford Motor Company before he was appointed Secretary of Defense by President Kennedy: McNamara.

The Secretary, trim and bespectacled, moved in an aura of special public respect and acclaim as the instigator of large-corporation-type management methods for economizing and streamlining cumbersome government machinery.

Talking with Raymond, McNamara followed his usual method and came straight to the point. Williams had been impressed with the Secretary's direction and speed. The McNamara method was: "Please let me know what you need, and I'll go back and get you the money. But I can't just go in there and ask for $100 million. I have to know what you have in mind."

Williams said: "So we laid out what we thought would be the essential basic requirements to go full speed with what was termed 'Ports-a-Go-Go'. And we had to think about Da Nang, Chu Lai, Vinh Long, Nha Trang, Cam Ranh. . . . We made quick calculations on how much steel bulkhead we would need, how much pile driving and how much dredging . . . quite coincidentally, it came out fairly accurate.

"And so we were told to think big and we thought big. We came up with a $48 million bill of particulars which was handed to McNamara the next day. And he said, 'Don't worry about it. Go. I'll get the money.' So my job was to run back and lay this thing out in a more logical, palatable fashion to RADM Heaman, and all the contractor-management types."

The $48 million figure was only for immediate expenses on urgently needed ports, and the pile drivers, dredges, pavers, quarry equipment and tug boats—all the equipment necessary for large pier construction.

Based on the MACV planning of the construction required to support the Logistic Islands concept, the Secretary recognized a requirement totalling about $1.0 billion. Then he shoved off with the usual rush in the company of the same high-powered military leaders who had accompanied him to Saigon, GEN Wheeler and ADM Sharp.

That same month, November 1965, the contractor consortium, RMK–BRJ, initiated a very important first step in their preparation to do the billion dollar building program: A formal training program for Vietnamese workers. At the same time, they established the Critical Path Method, designed to simplify methods at building sites, a system to schedule work at the jobsite so that delays could be minimized.

The OICC and contractor in Saigon, PACDIV in Hawaii and BUDOCKS under the new Chief, RADM "Ace" Husband, with his special new Southeast Asia staff, met in feverish sessions to map out their plans for the ambitious program ordered by Secretary McNamara.

Husband met, of course, with white-haired Ed Sheridan, the Deputy Assistant Secretary of Defense (Properties and Installations). He also met with one of Secretary McNamara's bright associates, Paul R. Ignatius, who was now Assistant Secretary of Defense for Installations and Logistics, along with Jack Bonny, the canny MK president.

Bonny told Ignatius that the augmented contractor combine, RMK–BRJ, would manage a $35 million-a-month Work-in-Place building rate by May of 1966.

However, Bonny said to do this, they would have to have plenty of shipping. That would mean, in view of the paucity of deep water berths and the gang-up of shipping waiting at anchor to be unloaded, plenty of lighters, LSTs and other shallow-draft craft to handle the unloading.

He also said that perhaps 10,000 Third Country Nationals (like Koreans and Filipinos) would have to be brought in quickly to make the machine work.

Later discussion brought the target Work-in-Place (WIP) up to $40 million per month. That would be achieved by October of 1966.

In late December, just after Christmas, a new contractor boss arrived in Saigon. He was Bert L. Perkins, handsome, blond,

youngish (then 42) former Marine fighter pilot, most recently boss of Morrison-Knudsen missile sites in the western U.S. During the Korean war, he had a distinguished record as an aggressive Marine fighter pilot, and had been shot down twice and gone back to fight again.

His arrival in Vietnam now coincided with the check-in of RADM Robert R. Wooding to take over as OICC in January 1966. RADM Wooding, a tall, dynamic administrator coming in from the BUDOCKS Southeast Division, was also two-fisted—a fighter and unafraid; he was known in Yards and Docks as the OICC's John Wayne.

The building scene in Vietnam was passing to a big calibre effort, and as it became a truly-maximum effort, it was a scene of excitement and war-time emergency.

Wooding summed it up: "The first thing I noticed was chaos, if that's the proper word. . . . We didn't have an adequate staff to handle the damn work load. And then we had all the various Services demanding that their work be done right now. We had to get camps to house our people in the field. We had to get equipment depots to account for the material and get it under some kind of custody.

"And then we had to make sure that our work was processed as expeditiously and as efficiently as possible. And through all this, we had people looking over our shoulders saying, 'Where's the management? Where's this, and where's that?'

"It's not that we neglected management. We tried to control as best we could, knowing as our work expanded, we could go to more sophisticated management control.

"We made a tour of all construction sites . . . went over to Poro Point in the Philippines to see what was there. As we visited each site, we'd list what we thought were requirements that we had to have in ways of equipment, materials, and so forth. We knew we had to have the work force. . . .

"We had to get people flowing into the country and we went to the Philippines, to Manila. Perkins went up to Korea and established labor offices. . . . We made a trip around the world, practically, going to other sites, trying to enlist people to come out there and come to work.

"We put in orders for materials and I, the OICC, would have to

decide what they were. They were gigantic things. It seems to me we ordered 389 D8 tractors, for example, I mean the numbers got to be astronomical."

There were plenty of colossal-sized headaches, and plenty of troubles, in this derring-do kind of all-out war effort. This was a new kind of struggle which did not fit the measure of past wars. There was plenty of urgency about it, but on the other hand, it was still a peacetime war emergency, still constrained by peacetime procedures for the authorization and funding of construction projects on a line item basis—an anomaly if ever there had been one.

Meanwhile, Bert Perkins and RADM Wooding went after the result with a fine "damn the torpedoes" gallantry. As Perkins said later on, in summary: "We just tore into it. . . . Our first priority was performance. There was no way, no possible way, that you could satisfy requirements of meeting all of the peacetime regulations, and at the same time meet the commitment they wanted.

"So we figured that the first thing had to be accomplishment. . . . We had to meet the critical dates in the requirements of the military, because construction was the limiting factor in the logistics, and the logistics at that time was the limiting factor in prosecuting the war, it was that simple.

"Now we also knew if we let our performance go far ahead of our management and our accountability and this sort of thing, that we would all get shot down. There was no question about that. And so, as a matter of priority, the first thing was to get the job done.

"We organized to do just that. . . . The second priority then was to get up to speed on all these other things that we had to meet: All the regulations and accountability and this sort of thing. Now, we did them concurrently, but admittedly we put the emphasis on the first. And then there came a time when we got over the peak and we could meet these things and we could react as rapidly as required and . . . put the emphasis on accountability.

"We knew we had a huge exposure, because when you move ahead on a program like this, a concurrency and emergency program, you are making a lot of errors. If you make a hundred decisions a day, you know you are going to make some errors.

"Well, we knew that, and we faced up to it and we tried to do things to be very open. We tried to answer questions of the people that came in. We tried to take them through our operation and show

them what we were doing. We did not try to give them a big snow job. . . . Now, on the Navy side, the man, of course, who had to lay it on the line was the senior man, and that was Bob Wooding. I might say his staff . . . were really gung ho and solidly behind this.

"Now, obviously . . . everyone of these senior people was sticking his neck out, automatically: (Admirals) Husband and Enger, and we had the full solid backing of (CAPT Albion W., Jr.) Walton and his group (at PACDIV, BUDOCKS) and Foster (CAPT Foster Lalor at Washington HQ of BUDOCKS) and his group.

"So everybody was in the pot together. I guess that most of the radical approaches were mine, because I was the newest person in there. But there was equal interest in everyone, and dedication. It was tremendous.

"We discussed this before we went out, RADM Enger and RADM Husband, Foster (Lalor) and myself, that there was no need in my going out if it was going to be run by committees. It was all agreed, and I must say . . . it was operating like one man, it was great. . . . If we'd been in uniform, we would have been Seabees."

CHAPTER THIRTEEN

Gearing for Paroxysm

GEN Westmoreland called 1966 "The Year of Development" in his history of the Vietnam War. But on the eve of that year of zooming expansion into RMK–BRJ's maximum effort, three top contractor people were involved in a Viet Cong incident which seems more like the earlier, smaller phases of the war.

That incident was the capture of Hank Hudson, the RMK–BRJ Project Manager, and two other constructor chiefs on December 20th.

Probably the Hudson episode seems to be from an earlier period because the enemy involved were only Viet Cong, and not North Vietnamese Army or a mixture of NVA and Viet Cong, which became common as the war grew.

Also, the incident seemed archaic because the Americans involved were pre-computer construction stiffs complete with dashing half Wellington boots and a long-term, free-wheeling ability to adapt to being out-numbered and overpowered in an alien culture.

Hudson was engaged that day in the perennial hunt for rock—gold to the Vietnam builders. He had taken with him Edwin D. "Speed" Jones and Otto Scholton, a Hollander by birth and naturalized Canadian citizen who had Anglicized his name from Schultzson. He was a section superintendent. They had a Vietnamese driver named Chung Can Xuong. The party had driven to a potential quarry area about 15 miles north of Saigon. It was on the outskirts of Bien Hoa, the big airbase site very close to Viet Cong territory. And it was close to the later location of SUMPCO" (Saigon University Mineral Products Company). This quarry became RMK–BRJ's biggest in South Vietnam.

Near the village of Dian, the three men and their driver had stopped to examine some rocky outcrops. They were in the edge of a

small wooded area. Suddenly, three Vietnamese peasants appeared from nowhere carrying a submachine gun and automatic pistols. Poker faced, they silently motioned to the Americans and the driver to get out of their car and come with them.

They moved down a trail until they were well within the woods, and indicated to their captives that they would have to sit and wait there until darkness. They made the Americans kick off their boots and replace them with home-made Viet Cong rubber go-ahead sandals. The idea was that the prisoners would make less noise moving through the undergrowth. Then, when twilight came, they tied the Americans' hands behind them and forced them along a trail which generally seemed to lead northwest. Jones said later that they appeared to be heading for the well-known Viet Cong sanctuary area the "Parrot's Beak", just across the Cambodian border. It was only one of the many backwoods paths making up the Ho Chi Minh Trail.

In a short while, the Americans' feet were torn and blistered from the rough undergrowth of the trail. Hudson, through Xuong, asked if they could put their heavy boots back on—their feet were too tender for that kind of treatment. At first, the Viet Cong would have none of this, but eventually the leader gave them permission. To this fact, and the attendant extra noise as they moved through the jungle, Jones attributed their survival.

The captives were passed from one group of VC to another, in relays. Each group stayed within its own area. And each group, Jones said, seemed rougher and tougher than the last.

After many more hours of walking, at a fast pace, Jones could see that Scholton was stumbling and staggering. He asked the driver to intercede as an interpreter again and ask if they could slow down a little, because the oldest man was wearing very thin with fatigue. The answer came back that if Scholton couldn't stand the pace, the Viet Cong would simply cut his throat.

The trail led westward and southward of Bien Hoa and Jones said later they must have walked more than 20 miles.

At 12:45 a.m., making more noise with their boots by far than the average Viet Cong patrol, the group alerted an American ambush: an ambush set by the newly arrived American First Infantry Division, the Big Red One. This New York Division was establishing a base at Dian, and beginning a campaign against the local Viet Cong.

The men in the ambush fired a machinegun burst at the VC and the prisoners, and the Viet Cong and the constructors dived into a ditch. The Viet Cong fired back, and in the interchange, Scholton was immediately killed. In the reconstruction of the scene, later evidence indicated that the Dutchman was killed by his Viet Cong guard as soon as the American troops began firing.

Speed Jones recalls: "When the machinegun opened up on us, of course we hit the deck, or the dirt, as quick as we could. And the VCs crawled across us and moved down the road. And then we laid there very quietly for about 20 minutes until the lieutenant came out. And they could see the body of Scholton lying in the road. And the lieutenant yelled out: 'Hold your fire. Come on back in. They're here, and we will open up on them. . . .'

"We never gave him a chance to open up. Because we started hollering.

"I said: 'Don't shoot, we're Americans.'

"He said: 'Are you kidding?'

"And I said: 'No kidding, we really are.'

"He said: 'Don't you know there's a curfew on?' That was crazy enough.

"A sergeant that was behind him said he would come out and see us. He told us to come out in the middle of the road with our hands up.

"We told him: 'Hell, we can't get our hands up, they're tied behind us.'

"So he said: 'Get out in the middle of the road anyway. . . .'

"We told him we had a chauffer there that was smaller. That's when he asked us what the name of the main street in San Francisco was—who won the World Series."

In the confusion—it developed that the infantrymen were conducting their first ambush and they were excessively jumpy—the constructors might have been killed accidently at any moment. To the rear, the First Division began to fire artillery and machineguns into a number of nearby jungle concentrations.

But the patrol at last was satisfied that these indeed were Americans, and they were taken to the rear. The Viet Cong had made their escape neatly. And it was a sad procession of constructors that accompanied the body of Scholton back to the rear headquarters of the First Division.

Jones and Hudson eventually were spirited away to Saigon and sent back to the U.S., to protect them from Viet Cong vengeance. The theory was that with their inside acquaintance with the Viet Cong trails trending towards Cambodia, the constructors knew too much of the positions of the Viet Cong and their method of operating, for their own safety.

After a visit home, Jones and Hudson were not sent back to Vietnam immediately, but instead, to Melbourne, Australia, for work on the new Morrison-Knudsen-built airport there. Later, however, both Jones and Hudson came back to work in Vietnam construction.

* * * * *

At year's end, the new era in Vietnam building got underway with a rush, as Secretary McNamara returned to Washington and began his campaign for the military construction funds required from the Congress. The Secretary, early in '66, requested $1.075 billion for construction and $200 million from Congress for "supplemental" funds for contingencies. Most of these funds were to be used for Vietnam building, the remainder for construction in Thailand.

Then, through his Deputy Assistant Secretary of Defense for Installation and Logistics, Paul R. Ignatius, McNamara gave Yards and Docks a promise that $200 million could be used immediately for equipment and materials.

Crucial steering meetings were held in Ignatius' office in the Pentagon, and attending were Edward Sheridan, Ignatius' next in command; also the two new head men of Yards and Docks, Rear Admirals A. C. "Ace" Husband and W. M. Enger. Husband and Enger had been in command at Yards and Docks since November, 1965.

The $200 million promised by McNamara would give the Yards and Docks' bosses an initial amount to get the major procurement underway. This kind of commitment was known as "advance obligation authority" and gave Y&D the authority to obligate

money in contract arrangements. However no expenditures would be made until Congress actually appropriated the money.

The procurement of equipment and materials, like the mobilization of people, was a super critical problem. Vast quantities had to be realized in a rush, and even more lead time was required than for getting trained personnel together. Fortunately, there were large reserves of construction equipment from previous war emergencies that could be tapped—just as there were thousands of potential chief petty officers working in civilian construction projects who could become Seabees.

The Services had their reservoirs of graders, scrapers, bulldozers, sheep's foot rollers and building materials in many large storage areas—rows and rows of these big and expensive items in large guarded areas. The Navy called their system of such material and equipment the Prepositioned War Reserve Stock, PWRS.

The Office of the Chief of Naval Operations had prepared general contingency plans from which lists of materials and equipment were developed for stockpiling for immediate use in the event of war. While the total required reserve of materials was never achieved, PWRS satisfied a part of the requirement and provided a stockpile from which to draw.

BUDOCKS' portion of the PWRS stocks were stored at the Seabee centers at Port Hueneme, Davisville (R.I.) and Gulfport (Miss.).

Because of the demands of both RMK–BRJ and the Seabees, the PWRS $90 million stock in late 1965 was drawn down to $40 million in six months. About $20 million of this $50 million out-go was "sold" to the contractor. From the $20 million, replacement stock was ordered to keep up the PWRS. From July of '65 to July 1967 (Fiscal Years 1965–67), the total value of PWRS equipment and materials utilized in Vietnam was $97 million.

In view of the colossal and urgent construction effort they would have to undertake, the OICC and contractor were acutely aware that vast new amounts of equipment and materials were going to have to be procured in a great rush—far more than could be obtained from the PWRS.

As the RMK–BRJ and OICC engineers ran through calculations of the numbers of barracks and other Service buildings that would have to be erected, they concluded early in 1966 that they would have to place an order for 196 million board feet of lumber. As the

purchasing office of RMK–BRJ at San Bruno, California (near San Francisco) told Bert Perkins in Saigon, they would have to corner all the West Coast lumber sources to secure this amount. And at the same time, the RMK–BRJ engineers calculated that for the buildings to be put up immediately in Vietnam, 10,000 doors would have to be ordered.

The value of construction equipment would have to be increased from $41 million, in December of 1965, to $118 million a year later. This would mean an increase of 4,000 pieces of equipment. Besides the equipment to be bought, there would be vast inventories of rented or leased equipment, such as dredges, trucks and pile drivers.

The quest for dredges covered Hong Kong, Singapore, Manila, Japan, and was conducted by "Barney" Coyne, the head of procurement for RMK–BRJ, and by Headman Bert Perkins, himself. Dredges were secured from Hong Kong and Japan, and five new dredges recently deeded to the Vietnamese government by AID were borrowed back. By the Fall months of 1966 there were 14 dredges in service, ranging from three small capacity 10-inch (diameter of pipes) type to the 30-inch giants, JAMAICA BAY and NEW JERSEY.

In planning the expansion of their construction equipment, RMK–BRJ and OICC top levels laid on "spreads" of equipment, which means groups of equipment specialized for certain functions, planned so that they would supply a given building capability. These spreads were designed for crushing, earth moving, asphalt lay-down, and building.

The earth-moving spread, for instance, was composed of seven D9 bulldozers, two graders, one drag line ("steam shovel"), five scrapers, three rollers and two water trucks. These specifics were added to or varied according to the needs of the locality. Thus, for a sandy site, two 834-tractors were added.

One of the largest material demands would be for cement. The quantity of cement needed for a jet airfield—including runway, taxiway and aprons—would be about 110,000 tons on the average. Thus a minimum need of 750,000 tons would be needed for airfields alone.

The procurement ace of RMK–BRJ, Barney Coyne, scouted Asian sources and fixed on Taipei, Taiwan, the Chiang Kai-shek Republic of China, as the best source. Led by him, the researchers found that

Taipei could meet the specifications and production requirements at the lowest cost. The Taipei government agreed to produce 50,000 tons per month, which was estimated to be the requirement during the peak of paving operations. Cement was also fixed upon as the principal soil-stabilization element for the typically-sandy sites of South Vietnam.

These massive material orders were to precipitate several Congressional investigations, widely noticed, and perhaps too sensationally covered, by much of the press. Of this, more later.

But the most urgent need was to provide a work force, and the planners hoped to increase the numbers working for RMK–BRJ from 24,000 in December of 1965 to 40,000 by May of 1966, and hopefully, 58,500 by October of 1966. This would include 5,500 U.S. nationals, 8,000 Third Country Nationals, and 45,000 Vietnamese. The labor-recruiting offices were set up in Seoul, Korea; Manila, and in the gamut of U.S. cities covered by the members of the contracting consortium—San Bruno, California; Boise, Idaho; Houston, Texas; New York City and Charlotte, North Carolina.

Plans were laid out to build 18 camps for these construction workers, to range in size from 100 to 1,000. And 33 dispensaries were planned to maintain the health of the men.

But execution of the plans, the actual building of the contractor living, working and storage areas had to wait. These facilities, the camps, even essentials like storage yards and depots, had to be left till much later on the MACV priority lists.

The ingenious improvisors of the contractor ranks found expedient ways of making up for these lacks. One quick solution was to build some of the customer's working and living spaces early in the program and use them on a temporary basis. It was not until later in 1967 that the more drastic military priorities were somewhat eased and the contractor had time to build better storage, headquarters and living accommodations for his own requirements.

* * * * *

There was no doubt that shipping was the lifeline of the mounting American war effort. To increase the flow of shipping of contractor

materiel, a monthly rate of 100,000 tons, with a value of $8 million, was set up as a target. To help boost the material inventory of $44 million to $185 million, Navy task forces were sent to expedite shipping at the main embarkation points, Port Heuneme and Oakland, California; Davisville, Rhode Island and Gulfport, Mississippi.

The supposed miracle of air freight, long expected in this age of jets and rockets, had not yet become a fact. The "big" planes of the age, C–135s, C–141s, C–130s, were fine for freighting emergency cargo, like key personnel and electronics across the oceans. But we still had to depend on 12-knot freighters (or slower) for the heavy stuff. In support of Vietnam, all bulk POL (Petrol-Oil-Lubricants) more than 99 percent of ammunition, and over 95 percent of the tonnage of all other cargoes went by sea.

Two other urgent needs of the contractor were settled quickly by bold, decisive action. By June of 1966 RMK–BRJ had managed to establish its own teletype system straight to the U.S., out of Saigon. And before the year's end, the consortium had developed its own transportation service, through the lease-purchase and charter of 16 aircraft, two commercial LSTs, ten LCMs, 30 barges and ten tugboats.

As the dimensions of the new, larger construction requirements were emerging in Vietnam, so was the workload in Thailand and OICC Thailand in Bangkok was busy with the creation of two additional contractor groups to accomplish this work. The largest of these was to build a large-scale airport and seaport in southern Thailand, on the coast of the Gulf of Siam. This would provide a new seaport center which would be one of the largest in Southeast Asia, and on the same site, the longest airfield runway in Southeast Asia, in the vicinity of a town called U-Tapao. A consortium of Dillingham, Zachry, and Kaiser (DZK) was selected for the job.

Both Dillingham, headquartered in Hawaii, and Kaiser, with headquarters in Oakland, California, were eminent in the large, heavy construction of the "horizontal" kind, such as piers, roads, and airfields.

The second large joint venture would accomplish work at several Army and Air Force bases in central and northern Thailand. The consortium of Utah, Martin, Day (UMD) was selected for this work which approximated $38 million. The decision to involve two con-

tract entities in Thailand was significant considering that only one, RMK–BRJ, was doing the whole job in Vietnam. There were several reasons for this difference including the fact that the Thailand work was not widespread throughout the country. DZK concentrated its entire effort in the UTAPAO-SATTAHIP area. It was then feasible to utilize a second consortium for the up-country work.

The Utah Construction and Mining Company, the sponsor of this joint venture, was established in 1900 and had its home office in San Francisco. Utah had accomplished a variety of heavy construction work including dams, bridges, railroads, and tunnels. Day and Zimmerman of Philadelphia was the engineering member and Reed and Martin of Honolulu contributed primarily in the procurement area.

* * * * *

For some time in 1965, as the building workload increased in Vietnam, Ed Sheridan in Pentagon-land, had been suggesting to the MACV chiefs that a "construction czar" should be appointed on GEN Westmoreland's staff. The military building effort in Vietnam was in need of an overall boss.

BUDOCKS had been established as the construction agent for the building program in Southeast Asia. The OICC designed and built what the "customers" wanted. But each of the Services wanted its projects to have first priority. It was inappropriate for the OICC to determine priority issues. Fundamentally, the MACV Commander had this power, but it was not being exercised at this point, at least in Sheridan's view.

When DASD (P&I) Sheridan visited the MACV command in late '65, and suggested such a "construction czar", there was opposition on several fronts.

In brief, the objection centered on possible undermining of the chain of command among MACV, CINCPAC, and the JCS. CINCPAC stated that COMUSMACV had exercised control constantly and successfully in execution of the construction program, and that he had an organization that was functioning well. He

stated that logistic difficulties and construction problems in RVN would not be solved by changes in organization.

Sheridan summed it up: "The objections of CINCPAC were recognized as being valid military command objections, and in order to make the suggestion more palatable, the term 'Construction Czar' was dropped and 'Director of Construction, MACV' substituted therefor . . .

"The recommendation was made on our return to Washington to the Chairman of the Joint Chiefs of Staff (GEN Earl Wheeler). GEN Wheeler queried CINCPAC and the suggestion was immediately turned down, on the basis that this would place the construction head in a position of more authority than any other of the top ranking staff members of MACV. And would also, in his direct access to the OSD (Office of the Secretary of Defense), allow the construction czar to bypass CINCPAC.

"However, after much discussion between the Secretary, the Chairman of the JCS and CINCPAC, it was determined by Mr. (Cyrus) Vance, who was then DEP SECDEF, that the position would be created. A charter of responsibility was developed by our office and reviewed by the JCS. BRIG GEN Dunn was appointed as the first Director of Construction."

BRIG GEN Dunn came to the assignment from Korea. Veteran of a lifetime of experience as an Army engineer, he was also especially well qualified as a staff officer.

He had wide experience in such diverse building jobs as Thule, Greenland, the nation's first Ballistic Missile Early Warning System, and as the Director of the Titan II Missile System construction. He had worked with the Army, Air Force and Navy in many high-priority projects, and was therefore well qualified to resist the slings and arrows of the Services competing for their favored building efforts.

Before moving to Saigon, BRIG GEN Dunn reported to Washington to tie down the new administrative machinery which he would use to weld the various programs of the different Services into a coordinated whole.

Dunn summed up his new charter: "The Secretary of Defense had designated me to be, in effect, the engineer for MACV with the authority to decide as GEN Westmoreland's representative what would be built, and release the funds. Also to allocate all of the

construction resources of any element of DOD, both troops and contractor.

"This was a fairly broad charge.

"Funding was by Service, and not by the DOD (Department of Defense).

"The provisions of my charter gave me the authority to approve what each Service did with these funds, and the allocation of the construction support to the projects, either troops, contractor or a mix of both. To reduce this seemingly insurmountable problem, I got agreement on several actions before I left Washington for Vietnam.

"One was to use the major capability in terms of computer and administrative process—already installed by the Navy for funds control. I got agreement that all funds would be handled through the Navy. In other words, they would be 'banker' for all Services; they would keep track of the accounts.

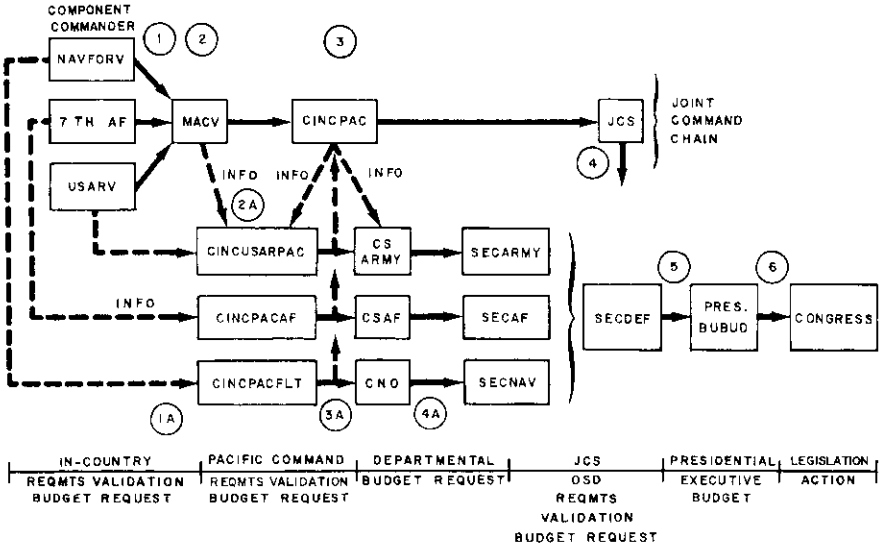
"Secondly, it was decided that I was to have the authority to issue Construction Directives against each Services account, so that the money could be spent only on the basis of these Construction Directives.

"Thirdly, instead of 15 pots of money for each Service, DOD would change their procedure and there would be one pot for each Service. Then I would have the authority to, in effect, approve (for GEN Westmoreland) what each Service could build, instead of all competing at the same time for their particular pet projects.

"So that was really the job, to get each of the Services to tie their programs down. I set up an organization of about 85 people, manned by people from all the Services. I deliberately requested and got approval that my Directorate of Construction would have Army, Navy, Air Force and Marines in it. It was a totally combined effort, so nobody could say that any one Service was predominate, and I must say that the people that came looked at this thing from the broad point of view. . . .

"There are many stories of many specific things that came up. . . . But all of these were a part of getting the job done to assure that what was being built was that which the Theatre Commander needed and not what the individual Service or an individual person felt was first priority."

REPUBLIC OF VIETNAM
MILITARY CONSTRUCTION PROGRAM REQUIREMENTS AND BUDGET CHANNELS

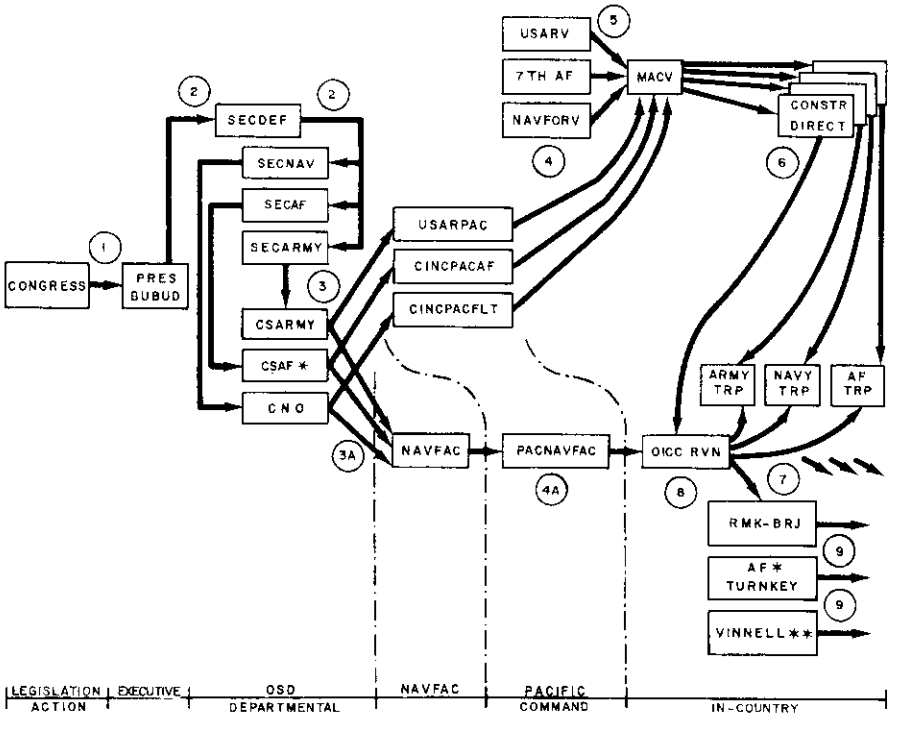


1. COMPONENT COMMANDERS SUBMIT REQUIREMENTS TO MACV BASED UPON SECDEF APPROVED DEPLOYMENTS.
1-A. INFO TO RESPECTIVE SVCE CINCPACS
2. REVIEW AND COMMENT TO CINCPAC ON COMPONENT COMMANDERS SUBMITTALS. CINCPACS. (VALIDATION OF PROGRAM)
2-A. INFO TO RESPECTIVE SVCE
3. CINCPAC REVIEW AND COMMENT TO JCS ON MACV PROGRAM VALIDATION IN LIGHT OF RESPECTIVE SVCE CINCPACS COMMENTS.
3-A. SVCE CINCPACS REVIEW AND COMMENT TO SVCE HQ ON RESPECTIVE COMPONENT COMMANDERS SUBMITTAL IN LIGHT OF MACV PROGRAM VALIDATION. INFO TO CINCPAC.
4. JCS SUBMITS JCS VALIDATED PROGRAM TO SECDEF.
4-A. SVCE HQS SUBMIT RESPECTIVE BUDGET REQUEST TO SECDEF.
5. SECDEF SUBMIT VALIDATED PROGRAM BUDGET REQUEST TO BUBUD PRESIDENT. (AFTER JOINT OSD BUBUD HEARINGS).
6. BUBUD PRESIDENT SUBMIT SUBJECT REQUEST TO CONGRESS.

NOTE - JOINT COMMAND CHAIN VALIDATES REQUIREMENTS.
SERVICE CHAIN PREPARES BUDGET REQUEST

FIGURE 8

REPUBLIC OF VIETNAM
MILITARY CONSTRUCTION PROGRAM FUNDING AND EXECUTION CHANNELS



1. AUTHORIZATION OF PROGRAM AND APPROPRIATION OF FUNDS
2. APPORTIONMENT OF PROGRAM AND FUNDS
3. ALLOCATION OF PROGRAM AUTHORITY INFO JCS & CINCPAC
3-A. ALLOCATION OF FUNDS
4. ASSIGNMENT OF PROGRAM AUTHORITY
4-A. ASSIGNMENT OF FUNDS
5. REQUESTS FOR ISSUANCE OF CONSTRUCTION DIRECTIVES
6. ISSUE CONSTRUCTION DIRECTIVES
7. OICCRVN ISSUE FUNDS TO OTHER CONST AGENTS TO FINANCE CONST DIRECTIVES
8. OICCRVN ISSUE NTP (OBLIGATION AUTHORITY) TO CPAF CONTRACTOR
9. COMPLETES FACILITIES AND TURN OVER TO USING COMMAND FOR BENEFICIAL OCCUPANCY
* FUNDING DIRECTLY FROM CSAF TO PROJECT TURNKEY
** FUNDING THRU OICC RVN TO USARV AND THENCE TO VINNELL

FIGURE 9

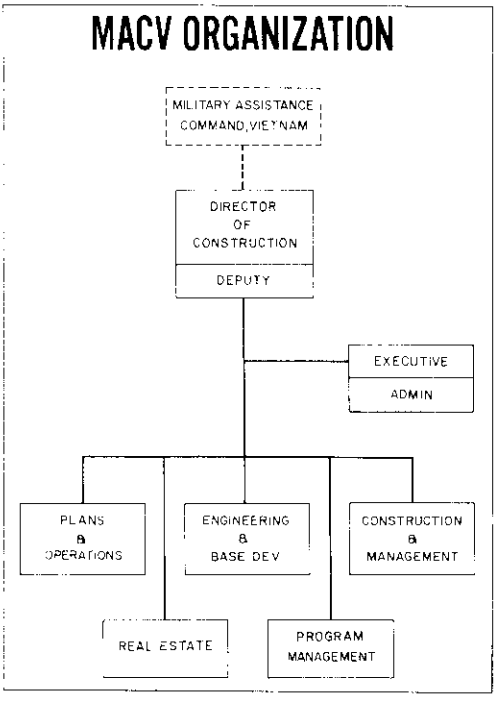


FIGURE 10

While the MACV organization was being tailored to meet the urgencies of the emerging construction program, BUDOCKS was wrestling with its Pacific Division organization to be best able to support the Navy in its increasing support role. The full scope of U.S. naval activities remained uncertain. Naval Support Activity, Da Nang, was growing rapidly but the Navy's role in the delta and other regions was in a formative state. On New Years Day, 1966, RADM Husband, the new chief of BUDOCKS, decided to be prepared to provide the full range of facilities engineering support to the Commander, Naval Forces Vietnam, at whatever level might be required. To do this, he decided to create a new, nucleus organization in Saigon, the Deputy Commander, Pacific Division, Southeast Asia (DEPSEA).

DEPSEA was officially created on 1 March 1966, when CAPT Paul Seufer relieved ADM Wooding as OICC. The CEC flag officer was then to be the DEPSEA. His mission was to represent the Pacific Division in Southeast Asia for the full range of BUDOCKS

responsibilities. He became responsible for the supervision and coordination of both OICC Thailand and OICC Vietnam. In addition, he was responsible for providing technical assistance to COMNAVFOR, Vietnam, in such areas as facilities planning, management studies, maintenance, development and operation of utilities systems and vehicular transportation. The DEPSEA staff remained small, calling in specialists from the PACDIV, BUDOCKS Headquarters and elsewhere to attack specific problems. It was a nucleus organization, ready for rapid expansion if the Navy's role were to grow to the extent that a large, permanent staff would be required. By late '66, the nature of the Navy role was more fully developed, and it was determined that the CEC Rear Admiral in Saigon could serve both as DEPSEA and OICC. This arrangement prevailed until the last Admiral to serve in Vietnam was relieved. DEPSEA was disestablished on 1 March 1972.

During its short life, this small organization made many significant contributions, but perhaps the most important was a comprehensive study of the need, and most effective solution, for electrical power in the I Corps. By 1968, power requirements had far exceeded any early expectations. Thousands of small tactical generators were being used at very high costs, low reliability, and involving large numbers of Seabees and Marines for operation and maintenance. DEPSEA first coordinated the deployment of existing NAVFAC MUSE (Mobile Utility Support Equipment) assets and developed the justification for the purchase of a series of high power portable generators to permit the replacement of the small, tactical units with more efficient, automatic units with generation and distribution at high voltage. This program resulted in increased reliability at lower costs and required fewer people. The units selected were such that many of them were ultimately relocated from Vietnam for other Navy uses as MUSE assets when the Navy requirement had ceased to exist.

In retrospect, the situation that existed in late 1965/early 1966 can now be described more completely than it was understood by those who were involved in it at the time. Major U.S. combat forces were being marshalled in South Vietnam, a non-industrial nation without its own complex of bases to support this force. The build-up had to be rapid for the collapse of the government was a serious possibility. It was critical to build the facilities needed to

supply this force and from which it would operate. The ports were vital just for the force to survive. The grid of "logistic islands" with their air fields were necessary to use this combat capability against the enemy. Everything was needed now—all at the same time. Each Service, properly focusing on its own requirements, pressed for the earliest possible construction of its facilities. But the Service planners were not sure what these requirements were. The entire process was evolutionary. It was easy to express requirements in broad terms—a runway with supporting facilities or an ammunition depot of a given capability, for example; but as these requirements were definitized on plans and specifications, they were refined and, in almost every case, they grew in scope. The time sequence of the cycle was such that the cost estimates originally developed by the Services had to be prepared at the stage when the requirements were defined only in the very general way. Frequently the estimates were prepared before the site had been selected.

The cost estimating problem was most important and some further discussion of it is warranted. Estimating is an inexact process under the best circumstances. In Vietnam, at this time, there was no meaningful basis for developing true "estimates". Sites had not been selected in most cases, surveys had not been made, very few, if any, designs had been prepared and, most importantly, the operating costs of the contractor, then undergoing a massive expansion, were not known. The specific equipment which the contractor would have available for each project was not known, nor was the labor mix that would be utilized. The productivity of the joint venture was unknown and the new organization would bear little semblance to the old. But the biggest unknown would be the overhead rate, the "burden", of the whole program.

There was no special fund to mobilize the contractor—no money was available to buy a material stockpile which could be used as necessary on approved projects—no money to purchase the unbelievable amount of equipment which would be required. All of these costs, along with contractor depots, camps, shops, spare parts, data processing installations, had to be paid for from the funds provided to the Services, project by project. They would be recovered by the application of a burden rate to direct project costs. The total amount to be recovered in this manner would be the sum of all contractor costs not directly associated with a project. The

rate would also depend upon the total size of the program. At this stage, neither was known, but all estimates had to include some guess of what the overhead rate would be. Notwithstanding these conditions, the Service planners had no choice but to produce a figure for each project and then to use it. The aggregates of these project estimates, to total program costs, were accepted by all involved—the Services, MACV, OICC and the contractor—as having a degree of authenticity they did not deserve. They were passively accepted, because there was no basis for challenging them, and no one had the time. The real job was to meet these requirements, not to worry at this time about precise cost estimates.

And this was the posture of the OICC and the contractor. The urgency was clear—so was the action necessary. A capability was needed to pursue major construction of all kinds, in many locations, simultaneously. As noted above, the requirements were known only in the most general terms. But procurement of equipment and material could not wait. Using previous experience in Vietnam as one basis, considering the standards employed to date, and using every bit of information available, the OICC approved procurement of vast quantities of lumber, cement, steel, plumbing fittings, pipe and electrical materials, along with several thousand pieces of shop and construction equipment. The basis for these decisions on what and how much to buy was much like the basis for cost estimating by the sponsors—little specific knowledge but a lot of experience and intuition. Simultaneously, the contractor initiated his worldwide recruiting effort to build the labor force which would be the real key to the capability. This effort is described elsewhere—its success permitted the final success of the total effort.

While the OICC was directing the procurement of equipment and materials to develop the contractor capability to prosecute the $1.0 billion program contemplated by the Secretary of Defense, upon his return to Washington and after consultation with his staff, Mr. McNamara decided that he would fund Vietnam construction at the $800 million level, and he directed MACV to develop a program within that guidance. The OICC procurement (totalling $187 million) was underway, however, and it was decided that no action should be taken to cut it back.

As 1966 progressed, several key events took place. Perhaps the most significant in this story being the creation of the MACV

Director of Construction and several of his actions. Two of his decisions impacted directly on the OICC-contractor. First, new construction standards were issued. A notable change from prior practice was that water-borne sewage systems would no longer be built. Regardless of the merits of the decision, it found the contractor with an extensive inventory of pipe, pipe fittings and plumbing supplies, much of which would ultimately be surplus to the program. Another most significant decision was that the urgency of the requirements for the combat forces was so great that the MACV-DC would permit only minimal effort by the contractor to build his own depots. As a result, when the huge quantities of materials ordered in the early 1966 period started to arrive in Vietnam in the spring, the contractor had completely inadequate facilities to receive, inspect, inventory and manage the materials.

After the crash effort in December 1965–January 1966 to define, estimate and justify their total requirements, the Services proceeded to refine them—sites were selected, and representatives of the operating units started to think of those things beyond the obvious "bare bones" requirements which would increase their effectiveness. This was a cyclical effort involving the facilities planners, the OICC, the architect-engineers and the operators. As the designs progressed, several important things were happening. First, the scope of many projects grew well beyond that to which the imperfect estimating techniques had been applied; second, potential costs sharply increased as the specifics became known and as the scope increased; third, a start-stop phenomenon emerged as changing representatives of the using organizations kept thinking up better ways to build their facilities; fourth, new specific material requirements emerged to meet the new specific requirements, but with the delays involved in new procurement.

As the contractor's capability grew rapidly in early 1966—with the expanding labor force, growing inventory of materials and with the growing fleet of equipment—his internal procedures which had sufficed during the earlier, smaller, more orderly program became severely strained. The cost collection system was not responsive enough, and the combination of this with the inherent inaccuracies in both the original project estimates and the burden rate was the source of many problems. In many cases RMK–BRJ finished projects before any cost information was available and, in most cases in the

early phase of the major effort, the costs exceeded the amounts programmed by the Service sponsors. When the OICC requested the additional funds, the Services were, of course, upset and could provide the money only by cancelling other projects since no contingencies were being held. This action, of course, would also reduce the total project base for absorption of the burden. The consequential spiral, ripple effect is easy to recognize. This further contributed to the start-stop phenomenon. The net result was that the program was in a constant state of churn.

By Spring of 1966 the OICC/RMK–BRJ had a capability, but it was waiting for a workload. The capability was not being fully utilized because of the conditions described above. It was generating costs every day, however. Not only was the overhead a continuing cost, but also so was the cost of the labor force. This force was now deployed in many sites all over South Vietnam. It was not highly mobile, and if it could not be productively employed on approved projects, which were ready to build, then the unused labor force generated new, unplanned overhead costs and, in fact, used money planned for project direct costs.

The preceeding paragraphs have described an imperfect "system"—an interrelationship which was not recognized as a "system" by those who were involved. This was the way the several parties acted and interacted under great pressure to satisfy the critical requirements of the large U.S. combat force. The consequences of this "system" effort were vaguely perceived by many during this period—in the final analysis, the primary consequence was that the OICC did not hold sufficient money to build everything the Services had originally planned on, and could not continue to employ the labor force which had been created to develop the maximum capability required. In essence, the OICC had developed a capability, but had to wait for the work to come to it—a responsive way to satisfy any requirement fast, but potentially costly if the workload is not available. The full consequences of this approach will be developed later.

CHAPTER FOURTEEN

Growing Pains of the Giant

The field organization of OICC was organized into four zones to match the four military zones of South Vietnam. Each of the building zones was under a Director of Construction (DIRCON) with Captain's rank.

The first DIRCON posts were at Da Nang, Cam Ranh Bay, and Saigon. They were staffed at first, in 1965, with Commanders. In January of 1966, four Captain billets were established, with the fourth job in Qui Nhon.

The RMK–BRJ organization was modeled to match the OICC. But they also added a fifth group for waterfront operations. As Perkins took over as overall chief of RMK–BRJ, the former chief, James Lilly, remained as his general manager for a number of months. Curiously enough, Lilly, like Perkins, had also served as a Marine fighter pilot but he was older. His duty had been during World War II.

When it was realized that the RMK–BRJ contract was to exceed $1.0 billion, it was recognized by the contract specialists in BUDOCKS that the fee percentage of 3.0% originally negotiated for a $15.0 million effort was substantially higher than appropriate. It was a most sensitive issue, however, since the joint venture was fully mobilized and there was no reasonable alternative but for the consortium to do the work which was required. Yet what BUDOCKS had in mind was a renegotiation of the contract to provide for a lower, more reasonable fixed fee percentage—the contractor was to be asked to forego a portion of his profit. This negotiation was successfully pursued by coupling it with a new idea—a technique which had been used with success in several weapons procurement contracts—the incorporation of an award fee into the contract to provide an incentive to the contractor to operate at a high level of effectiveness. We have noted earlier in the discussion of the nature

of a CPFF contract that there is little incentive to a contractor to seek a high level of effectiveness. On 1 May 1966, the contract was converted from cost plus fixed fee to cost plus award fee.

These negotiations resulted in a new fixed fee percentage of 1.7%. This was now to be called the "base fee". The new award fee was to be a maximum of .76%. The maximum fee the contractor could be paid was then to be 2.46%. The amount of the award fee to be paid would depend on his effectiveness. Since this was the first time the award fee concept was used in a construction contract, some discussion of how it was administered is appropriate.

The new fee structure was incorporated into the basic contract by a Supplemental Agreement which specified the conditions for its payment. To provide for a meaningful evaluation, the contractor's performance was to be judged every six months against a series of award fee objectives. These objectives and their revisions from time to time were formally incorporated into the contract by the means of the Supplemental Agreement. The contractor knew exactly what the OICC thought to be of major importance at any time. During each semi-annual rating period, the OICC staff would maintain a record of the contractor's performance against the objectives. These observations, both subjective and objective would be accumulated into a report shortly after each period for review by a formally

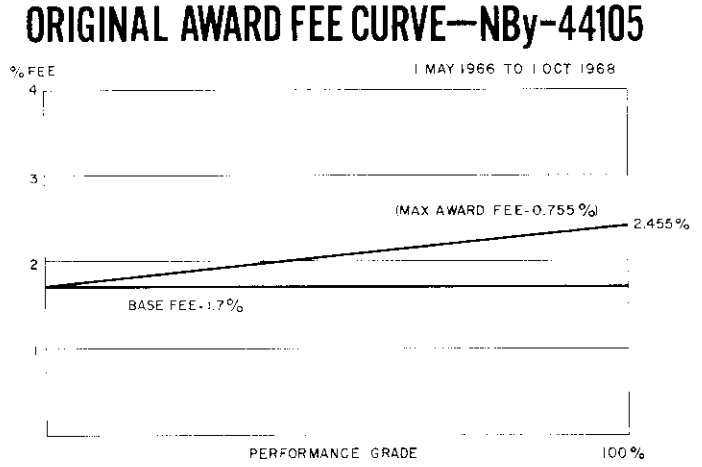


FIGURE 11

appointed Award Fee Evaluation Board. This Board was chaired by the Deputy Commander, Pacific Division, BUDOCKS Southeast Asia (DEPSEA), for all but the last period. (DEPSEA had been disestablished by that time—June 1972.) OICC Thailand and OICC RVN were the other members of the Board.

The two large contracts operating in Thailand (DZK and UMD) were also CPAF and were evaluated at the same time, but, of course, against their own award fee objectives.

Each Board Report was submitted to BUDOCKS Headquarters and provided considerable detail to support the grade assigned for the period. The contractor could appeal any rating to the Chief, BUDOCKS, if he was not satisfied. The following graph is a por-

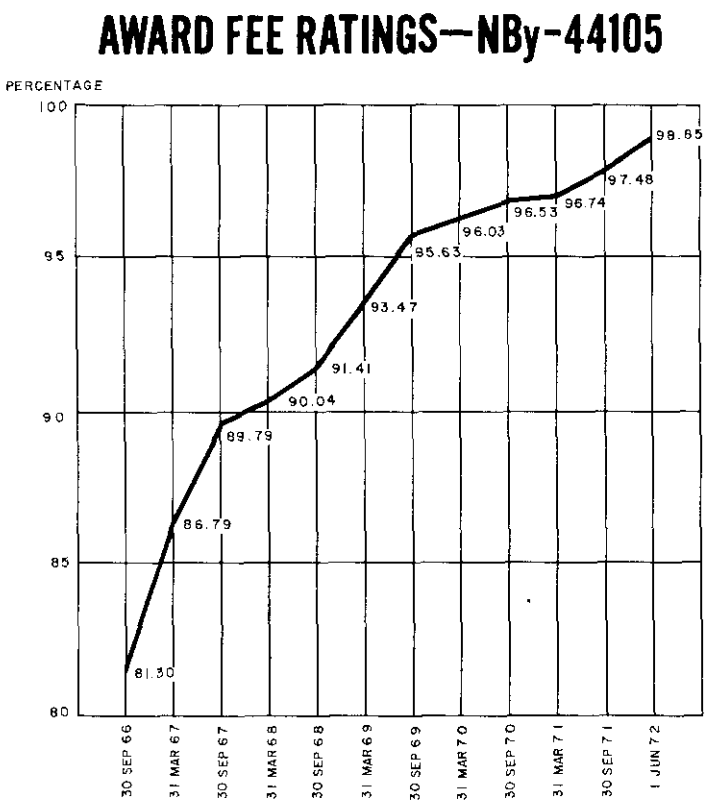


FIGURE 12

trayal of the history of the award fee ratings for RMK–BRJ during its operation under this phase of the contract.

After approximately two years of operation under the award fee concept, ADM Husband became concerned that the original concept had a significant weakness. The shape of the award fee curve was very flat. It provided for some award fee even at very low effectiveness ratings. And the experience to date had shown a steady increase in the ratings without any retrogression. The question he wrestled with was whether there was sufficient incentive left in the fee structure to assure that the joint venture would continue to assign top-flight people for the yet indefinite life of the contract.

After detailed study and discussions with the contractor, RMK–BRJ submitted a proposal for a revision to the award fee to provide a greater incentive to perform well. A formal Board reviewed the contractor's proposal and negotiated a revised award fee structure, as shown below. The primary characteristic of the new approach was that the fee curve was made steeper. The contractor would get no award fee if his rating fell below 81.65%, and the incremental gain or loss as his rating would change was to be meaningful enough to provide a real incentive. As can be seen, the contractor could now earn a maximum fee of 3.2%.

The value of the award fee provision cannot be precisely measured. The contractor did clearly make specific efforts in the areas of

REVISED AWARD FEE CURVE—NBy-44105

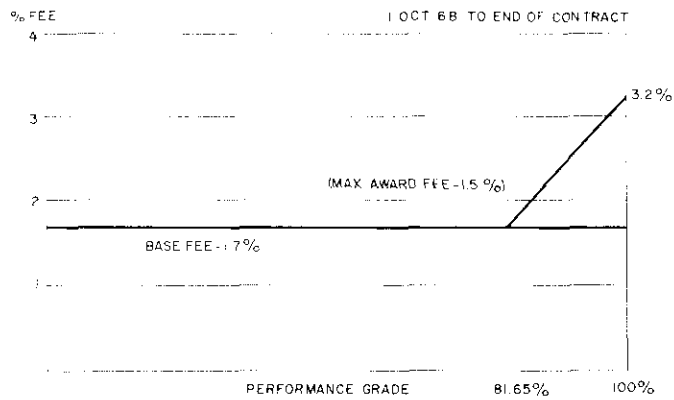


FIGURE 13

the award fee objectives. During the 1967–1972 period, RMK–BRJ evolved into a highly effective, very large, operation. It was not without its weaknesses, but when gauged against the standard of what one could reasonably expect under the conditions existing in Vietnam, the award fee ratings assigned were considered by NAVFAC top management to be a fair representation of performance. The conclusion at this time is that the additional fee paid to RMK–BRJ was saved several times as a result of the level of management effectiveness which evolved in the contract operations.

* * * * *

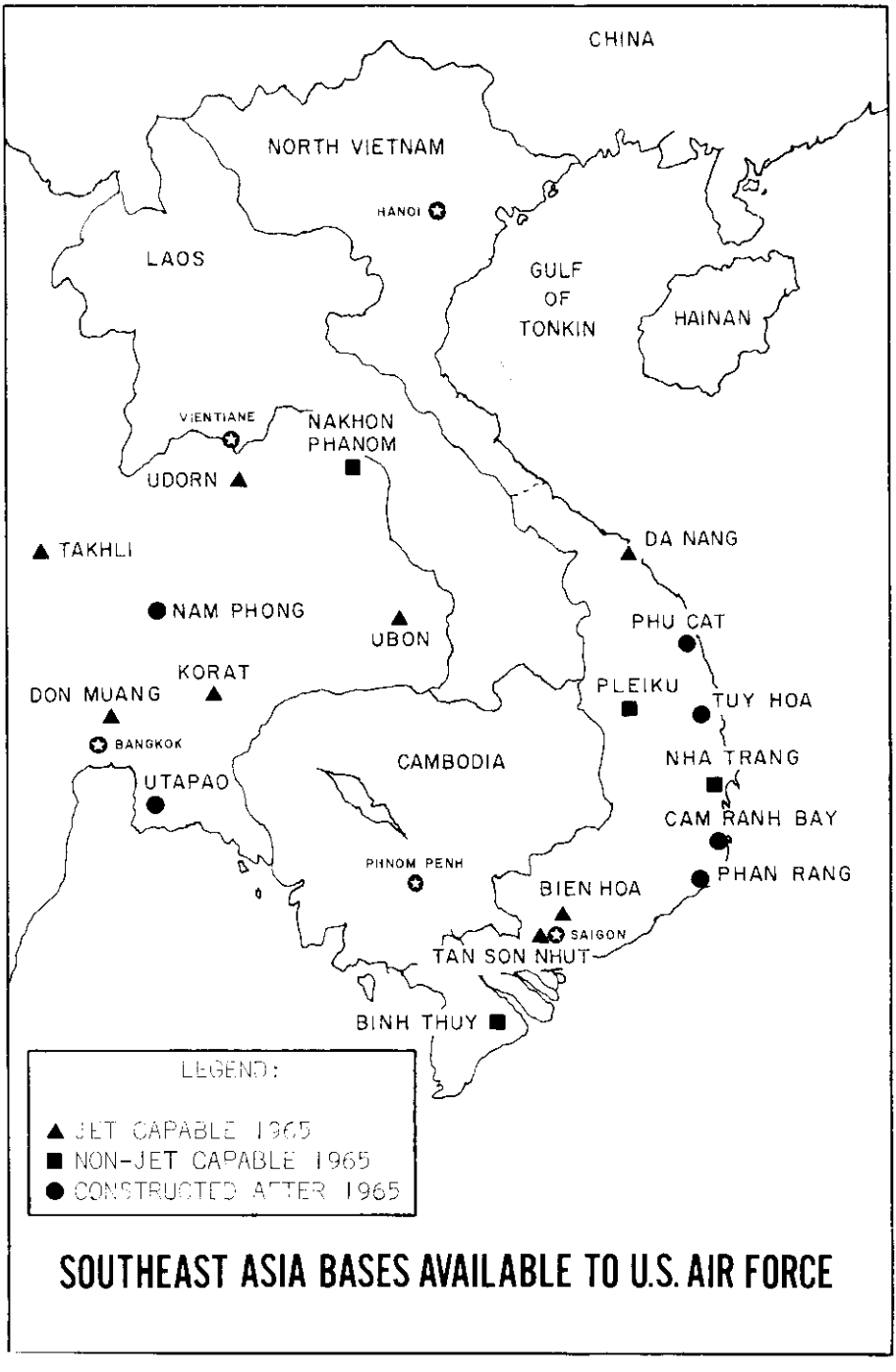
BRIG GEN Dunn, the new MACV Director of Construction, served in his newly organized job only five months. When he attained his promotion to major general, he was moved to J–4, overall Chief of Logistics, on GEN Westmoreland's staff. His deputy, COL D. A. Raymond, was promoted to Brigadier General and succeeded him as MACV–DC (DC—Director of Construction).

Probably the most severe problem to be weathered during his short term as MACV–DC involved fending with the Air Force's demand for a new airbase at Tuy Hoa. Tuy Hoa is on the mid-coast of South Vietnam, 80 miles north of Cam Ranh Bay.

The Air Force had felt the need for a major airbase here beside the large Cam Ranh base.

As the number of American troops in-country soared beyond 300,000, and seemed destined to reach more than 400,000 before the end of the year, many of the Air Force officers felt that there was an over-emphasis on building for the Army rather than for the Air Force.

Many Air Force officers felt that the Tuy Hoa airfield project was receiving short shrift at the hands of the priority-making authority at the MACV–DC and they voiced the belief that there should be more competition amongst contractors in the Vietnam area, that it was an unfair restriction on free competition that virtually all the building in Vietnam should be limited to the large RMK–BRJ combine.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NHA TRANG
UTAPAO
CAM RANH BAY
PHNOM PENH
BIEN HOA
PHAN RANG
SAIGON
TAN SON NHUT
BINH THUY
LEGEND:
JET CAPABLE 1965
NON-JET CAPABLE 1965
CONSTRUCTED AFTER 1965
SOUTHEAST ASIA BASES AVAILABLE TO U.S. AIR FORCE

FIGURE 14

The Air Force Director of Civil Engineering at the time of the Tuy Hoa episode, MAJ GEN Robert H. Curtin, who retired in 1968, recalled some of that: "We had felt, from our position as a customer, that the people running the store were in too big an operation. We would perhaps have liked to see it broken down into smaller segments for managing. There were other good reasons to the contrary—Logistics, and Personnel, and Accounting, and so on, that we probably didn't fully appreciate. In any event, we did feel that the RMK–BRJ operation was getting too big and unwieldly."

Another Air Force officer with a strong view at this time that the competition was too restricted in the building picture in Vietnam was BRIG GEN Guy H. Goddard, Deputy Director for Construction, Directorate of Civil Engineering in the U.S. Air Force. BRIG GEN Goddard said in retrospect:

"I feel that the Air Force and Army both could have entered more actively into the process and possibly gotten their facilities a little faster, without the common fears that were expressed of competition for supplies, competition for labor, and the right hand not knowing what the left is doing.

"I believe those are generalizations that are always used when one wants a oneness, a singleness. I don't subscribe to it."

BRIG GEN Goddard spoke about the restrictions which were self-imposed by the Air Force on their proposal for a contract to build the base at Tuy Hoa. "We drafted a special type of contract which precluded any proselytizing of labor, which required strict adherence to the wage rates established by the Vietnamese government, and which prohibited the interdicting of any line of supply that had been established."

The Air Force chiefs in Vietnam were blocked by the new Director of Construction against the urgent priorities they wanted for the Tuy Hoa base. The rationale of the Director and the Westmoreland command was that higher priorities had to be given to the vast building enterprise at Cam Ranh. Here, of course, a great new complex of port and airbase was getting underway: The replacement of the "temporary" aluminum matting runways and taxiways with concrete, the addition of three deep water piers (eventually there would be five) and the construction of nearly a hundred barracks, office and other cantonment buildings. Before that there was the massive job of moving more than two million cubic feet of the

shifting sands which constituted the great seashore desert of Cam Ranh. Some of these difficulties were noted in Chapter Eight.

At any rate, Air Force adherents at the top Washington levels appealed to Secretary McNamara directly, and, in BRIG GEN Goddard's summary: "Mr. McNamara empowered the Air Force to act as its own design and construction agent, and to retain a contractor outside the then-existing RMK–BRJ contract. And we did this with the full concurrence of MACV, GEN Westmoreland, and with the full realization that our method of operation had to be confined so as not to do damage of any type to the other effort which was most important."

So the Air Force immediately mounted a maximum effort to build the Tuy Hoa base, the final approval came from the Deputy Secretary of Defense on May 27th, 1966. The plan called for the finishing of the base by the end of June 1967.

The contract, which would run $52 million, from Military Construction Program funds, was made with Walter Kidde Constructors, a subsidiary of the Electric Bond and Share Company offices (EBASCO). The main subcontractor was B. B. McCormick and Sons of Jacksonville Beach, Florida.

One of the big problems in constructing the Tuy Hoa base was that there was no port facility anywhere near the building site. The contractor used whatever landing craft could be mustered. The original plan called for the construction of a port as part of the contract, but this was never completed.

The contract was what the building field calls a "Turnkey" arrangement, meaning a complete contractor job so that the buyer can walk into a completely finished project. "Kidde", said BRIG GEN Goddard, "ventured with a transportation effort, with an earth moving firm, did the design, mobilized equipment here in the States, transported it by separate bottoms, took it over the beach with landing craft, deposited it on the shores of Tuy Hoa, and proceeded to build, in the time frame demanded, a completely operational airbase."

Under this turnkey procedure the contractor is responsible for both design and construction—a significant departure from the more common practice of the Navy (and the Army Corps of Engineers) of obtaining the design of a project by a contract with an architect-engineer and the construction by a separate contract.

OICC Vietnam used several architect-engineer firms to produce designs which were used by RMK–BRJ. The turnkey approach has the advantage of involving the construction people in the planning of a project at the very beginning. In a case like Tuy Hoa, where the contractor had to mobilize from a zero base, this was a meaningful advantage.

By the first deadline, December of 1966, the Air Force had four squadrons of F–100 fighter-bombers based at Tuy Hoa. And thus, in COL Billie J. McGarvey's words, "From the Air Force standpoint, we certainly met every schedule requirement that had been laid out for us. Our time frame called for a permanent facility and all the supporting elements to be fully operational and completed by the end of June 1967, or one year after the initial contract award. Again, this date was met." (COL McGarvey was a Special Assistant to BRIG GEN Goddard at the time of the Tuy Hoa issue. Both were later promoted. Goddard to Major General and McGarvey to Brigadier General and later to Major General.)

BRIG GEN Raymond commented on Tuy Hoa: "I ran studies later on to see what the airfields cost. For all airfields in Vietnam that were fairly comparable in scope, Tuy Hoa Airbase was about par in cost, if not a little higher.

"There isn't any question that it was a successful job. It did produce an airbase in a time frame which in my opinion was also par for the course."

And it was a fact that in their first effort as a contracting agent and general expeditor of a building contract in Southeast Asia, the Air Force made a maximum effort to bring in the project at or below estimated cost—to show their capacity to design and manage this kind of ambitious project.

One of the best examples of this was the high priority plan to meet a drastic power shortage at the project by shipping in power generators from many missile bases which were then being deactivated, the Titan II class. The Air Force also did everything in its power to ease the shipping problems of the Kidde Company in their emergency situation.

But during the remainder of the war there were no other "Turnkey" contracts carried out by any of the Services in Vietnam. There were a few contracts to provide service and maintenance on facilities by such U.S. firms as Philco-Ford for the Navy, and Pacific Archi-

tects and Engineers and Vinnell for the Army. RMK–BRJ remained the construction contractor.

The Philco-Ford, Pacific Architects and Engineers and Vinnell contracts, to fill in the details for the record, were as follows:

The Philco-Ford contract was of a cost-plus-award-fee (CPAF) type, administered originally by the NSA Da Nang (Naval Support Activity) for the maintenance and repair of facilities, equipment and utilities in the I Corps area. Starting in 1966, it averaged about $20 million per year.

For their excellent performance, Philco-Ford was nominated by NAVFAC for the Navy Certificate of Merit. On July 1st, 1970, common support responsibilities in the I Corps were transferred from Navy to Army. The Army retained the Philco-Ford contract through June 30th, 1971. Then the contract was phased out and the functions were performed by an existing Army contractor—Pacific Architects and Engineers.

The PA and E contract was also a cost-plus type for maintenance and repair of facilities and the operation of utilities throughout Vietnam. It was first signed in 1963. The contract work rose to a peak of $100 million, and in 1968 there were 24,000 employees.

Vinnell Corporation, under contract to the Army since 1966, concentrated on electric power generation and power distribution systems, primarily through power-generating barges. Costs averaged $8 million per year. By the summer of 1966, RMK–BRJ was employing the unprecedented total of more than 40,000 Vietnamese workers. In July, that total was 41,286 with, at the same time, 4,019 American contractor employees and 5,739 Third Country Nationals. By this time, a network of training schools had been set up by RMK–BRJ, some in cooperation with the labor department of the Vietnamese government. The largest school was at the SUMPCO quarry, 15 miles north of Saigon.

* * * * *

In this early and middle part of 1966, as the construction effort slid into its biggest stride of the Vietnam war, and expanded to its

maximum size, some grievous troubles were already striking into this proliferating work-body.

The major ills sprang from the fact that the consortium had to build a huge machine practically overnight. They had to secure huge quantities of heavy equipment, mountains of supplies, and a tremendous working force.

One of the worst burns came from the unexampled procurement of supplies, like the lumber purchase of early 1966.

"Barney" Coyne, at the RMK–BRJ Saigon Office, and Larry King, the director of procurement at the RMK–BRJ main headquarters at San Bruno, California (right next to San Francisco airport) had ordered up a colossal amount of timber for the mammoth housing job in Vietnam. By the time all other estimates were included, the RMK–BRJ Saigon Office asked San Bruno for 78.4 million board feet of high-grade Douglas-Fir lumber.

This came because on January 11th, 1966, MACV directed that the construction of troop housing should be tents with wood frames or temporary wood frame buildings. The OICC and contractor estimated this alone to mean 2,500 wood frame structures of about 30,000 board feet each.

A whole network of bids was necessary: the amount was too large for most of the suppliers. It was practically the whole output of the west coast of America for that year, and the effects were so far-reaching that eventually Senator Wayne Morse, of Oregon, ran a very ambitious investigation. However, the needs of the housing-construction program were so great that not only was this colossal order used, but many subsequent large orders had to be filled to meet the still more extensive needs of the housing program in Vietnam.

RADM Walter M. Enger, then the Deputy Chief of BUDOCKS, recalls that process: "They were told how many people they had to house and they knew how many board feet went into a hooch, and it was a fairly simple matter of arithmetic."

RADM Enger, who had come into the job of Deputy Chief in November of 1965, made his first trip to Vietnam in the Spring of '66. As a practical matter, the Commander and Vice Commander would alternate on their trips, one "minding the store" at the NAVFAC headquarters in Washington while the other made his tour of the Field. RADM Enger remembers most vividly his visits to Da Nang, Cam Ranh Bay, and Saigon, where Newport, a new deep

water port up the Saigon River, was underway. He also remembers vividly conversations with the Blond Bombshell who bossed the RMK–BRJ operations in Vietnam, Bert Perkins.

"At that time," Enger recalls, "We clearly agreed that the name of the game was to get the facilities built and encourage training of the Vietnamese. And then, as time permitted and as soon as we could, to get control of our material and equipment. All during this period we were having great agonies with estimated costs. We just didn't know what things were going to cost."

All of the hoopla which arose as Senator Morse launched his investigation of the huge lumber purchase hadn't hit the newspapers and other public information media at the time of RADM Enger's visit, and they therefore did not discuss it. But they had lengthy discussions of the problems of keeping control of the inventory of the vast stores of building materials and equipment which were then reaching Vietnam in tidal waves of shipments.

One of the key improvements which RADM Enger and Bert Perkins discussed urgently was the incipient move to bring in data processing equipment to permit more sophisticated, rapid and effective accounting. But in the meantime, the emergency "Can Do" problems were of much more vital concern.

First and foremost of the high priority problems was the bustling work then being done to build deep water piers. At the time of this visit, Enger remembers: "Ships were lying out there two and three months without being unloaded. I remember flying over Saigon, Da Nang and Cam Ranh and there would be dozens of ships outside waiting to get in close enough to bring the lighters alongside them. Our cargo was then having to be brought ashore by lighters instead of being brought into deep water ports. The largest backlog of ships was the one at Saigon."

Enger recalled the vast program of building the new deep water ports with miraculous rapidity through the prefabricated method of the DeLong and Reeves pier systems. Probably the "Instant Pier" of the Vietnam war was comparable in order of importance to the "Magic Cube" and its various amphibious assemblages on the beachheads of World War II.

At the same time, the next crisis, beyond the need for deep water piers, was the program to build airfields up and down the country.

"We had to do this in some very difficult places, as around Cam

Ranh Bay, where the sands made it very difficult. And this was complicated by the fact that all these things had to be done concurrently.

"If we had been able to build them in an economical way, we probably would have built them one at a time. We couldn't do that. They were all needed. It had to be concurrent with the construction of the deep water ports."

But the biggest, most plaguing difficulty then rising inside the construction mechanics in Vietnam was an incipient funding problem which was destined to be a cause celebre.

As the buildup zoomed into high gear, a violent change was seen in the attitude of the Viet Cong and NVA towards the contractor. In the first, relatively sleepy years of building, 1962 to early '65, the enemy had remained largely passive about building operations—although there were always episodes of sniping, mining and bombing.

But as the American military machine gained strength and size with almost magical swiftness, the Viet Cong and NVA could see the rapidly growing threat in the American military preparations. It was in the early months of 1966 that the enemy, working largely through student and Buddhist discontent, managed to engineer violent demonstrations in Saigon, Da Nang and Hue.

A high level decision had apparently been made in the propaganda management councils of the foe, and strikes were arranged in both Saigon and Da Nang.

Leaflets began to turn up on the RMK–BRJ work sites. Typical was one which read: "To work for the Americans is treachery. Strike! Riot!"

At the spreading Cam Ranh base, a Vietnamese jeep driver who worked for RMK–BRJ was discovered to have a detailed plan of one of the American cantonments, together with a list of the inhabitants. And as the Marines expanded their beachhead around Chu Lai, while RMK–BRJ worked on the runways and taxiways, a Marine patrol killed a Viet Cong—and found that he was wearing an RMK–BRJ identification badge.

In Saigon, a Viet Cong raiding party set off a satchel bomb on a street corner where a group of RMK–BRJ workers was waiting for a bus. Seven of these, Third Country Nationals (Korean), were killed, as were three Vietnamese passers-by. And it was a fact that even

around the city limits of Saigon, the RMK–BRJ subcontracted truck drivers frequently paid Viet Cong "taxes" when they came to hostile check points on the roads. For this kind of payment, they were invariably given stamped tax receipts in return. It should be noted parenthetically that in crisis situations, the Viet Cong guerrillas frequently "lost their cool", forgot to be fish among fish, and visited the most barbaric of punishments and vengeance upon the Vietnamese who seemed to be recalcitrant. (Example: In the TET Offensive of 1968 the NVA and VC executed nearly 3,000 South Viets in Hue.)

When the Da Nang efforts at strike and riot hit their peak in the Spring of 1966, and the RMK–BRJ employees walked off the job en masse for a short time, detachments of Seabees and Marines moved in to pick up the burden. They were assisted by the American and Third Country National supervisors—including even Bert Perkins, who was glimpsed running a bulldozer.

* * * * *

It was easy to determine the overall shape of the supply grid for South Vietnam, and the location of the main deep water ports. But the method of construction of these "Ports-a-Go-Go", which all the leaders considered high priority, was the hub of much research and many ideas. Human inventiveness came surging up with all the vigor and force which our system of free enterprise has historically shown. Fortunately, World War II and Korea had given us wide experience in solving the port problems of military involvements abroad, and the emergency landing of vast quantities of material on shallow coastal shores.

But during years of slim military budgets, there had been little money for experiment with "instant port" systems. The Department of Defense, the Army and Navy had started high-priority studies when large-scale committment of U.S. Forces loomed in mid-1965.

Some of the methods proposed had bright novelty, others were invocations of much older ideas and equipment.

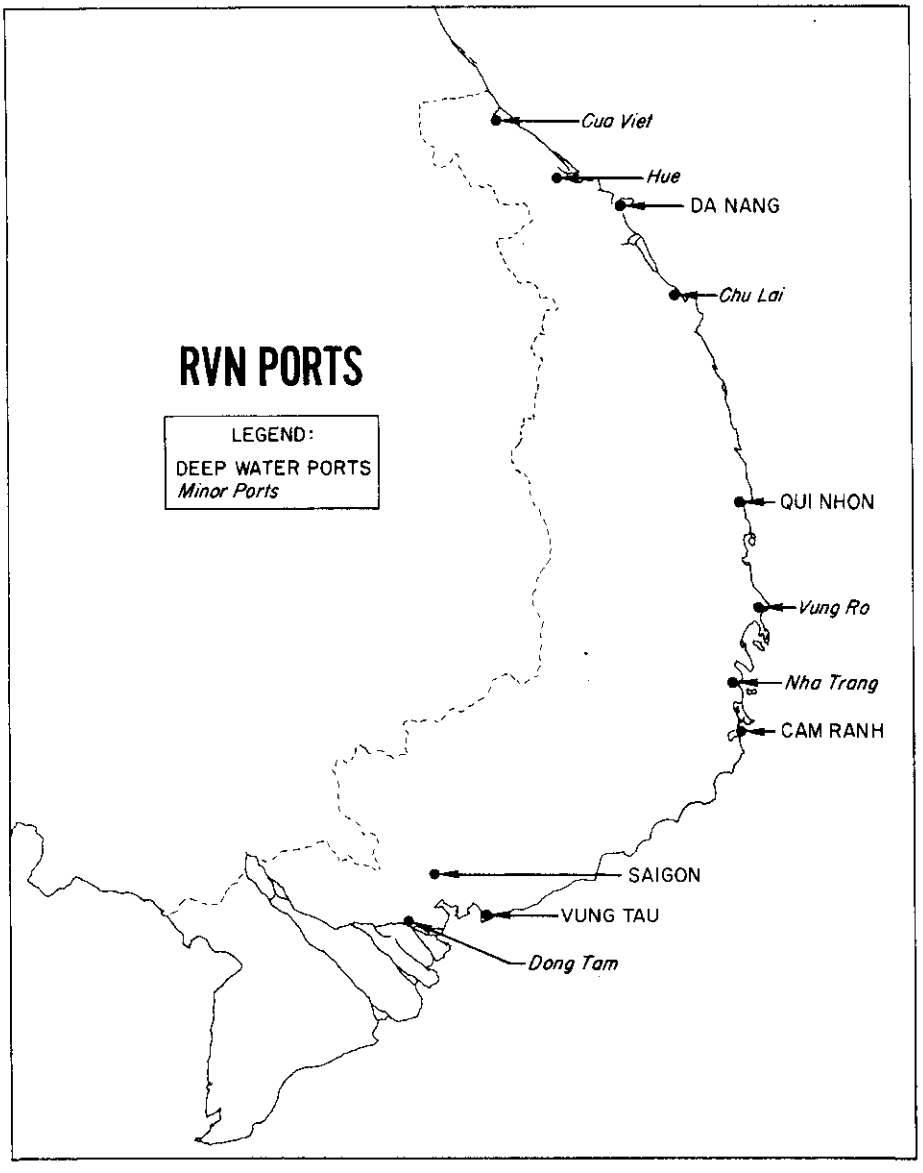


FIGURE 15

One was to build causeways so that trucks could be driven farther into the deep water to be loaded directly from the ships. This was a more solid (and more expensive) version of the pontoon piers of earlier expeditionary efforts, including the Chu Lai beachhead.

Several elevated tramway systems were studied, the most interesting based on man-made islands where docks would be located in the harbors and ships moored there. The tramway would carry the freight the rest of the way to shore.

The classic method of using lighters and various types of military landing craft was always available. Many ingenious inventions and techniques had been suggested and tried, including some huge amphibious vehicles developed by the Army. But the fundamental defect with lighterage was that small craft could not be used unless the water was calm, and that was not often the case.

In the first stages of our large-scale military commitment, when primitive lighterage and across-the-beach methods were used in the absence of a better solution, several civilian contractors did yeoman work for the Service Forces and RMK–BRJ. That was in the first emergency days while Army transportation units were being trained and sent to Vietnam. The civilian contractor barge companies were Alaska Barge, Han-jin and the Sea-Land Corporation.

In the I Corps, the cargo was handled at first by bluejackets from Navy ships. Marine Shore Parties were initially on the beach to help get the unloading situation in hand. In Chu Lai it took a long time to relieve these ready and two-fisted Marines and let them get back to their main fight—because of the inevitable lag in getting people from other Navy billets.

Later in the game, NSA Da Nang got the Korean Express contractor (hard-headed moving specialists) on board. Our assets of tugs, barges, service and amphibious craft and cargo-handling battalions came from a potpourri of sources.

The eventual solution of the port congestion problem was the use of large prefabricated piers of the DeLong and Reeves varieties.

The DeLong causeways, labelled "mobile platforms" in official terminology, were 600-foot moveable piers which could be towed as units or in sections and set in place with piles—to be moved away when the emergency was finished. The Department of Defense had access to some of these already built at the start of the heavy Vietnam committment. The Reeves pier, which involved smaller sections, was also prefabricated. The Reeves piers in Vietnam, however, were permanent.

The Reeves piers owed their origin to the offshore oil drilling stations in the Gulf of Mexico built by H. William Reeves earlier.

He had come to Vietnam to work for Brown and Root as part of the RMK–BRJ combine.

The emergence of the Reeves idea had come at the time of Secretary McNamara's November visit to Saigon, when his large-scale plans for building for the war were discussed.

Bill Reeves had been sent out as one of the echelon of consulting engineers for RMK–BRJ to make a survey of the engineering requirements in July 1965. He had checked in with the Pacific Division of BUDOCKS and had met RADM Davis, the Director, and also RADM Heaman, who was about to succeed him on his imminent retirement.

Reeves went on to Saigon and found the same "utter chaos" that RADM Wooding remembers. Reeves recalls: "Things were just in a horrible mess at this time. It was a problem of where could we really help, what could we do? I remember the last day I was in Saigon, I went to the OICC office and just left my name. There were so many people coming in and out. I just said: 'If I can help in any way, just call on me.'

"I went on back to Houston (headquarters of the Brown and Root Company of the RMK–BRJ combine). About the time I arrived in Houston, I had notification that they wanted me back over there, to work for the Navy in the OICC office as Special Consultant. . . . We worked on various planning reports, but at that time I had no part in any construction effort.

"This went on until Thanksgiving, when I had a serious illness in my family. My youngest son had a serious operation and I had to return home. At that time, there were some visiting people. Secretary of Defense McNamara came to Vietnam and there was a cocktail party given at the Caravelle Hotel. Discussions that night centered around the ports which were a big problem and had to be rapidly built. Over cocktails and whiskey talk, I made the suggestion that they employ some pre-fabricated techniques and get away from this onsite construction method which was just tearing us up. The next day, I left and returned to Houston.

"They started trying to remember who was this man that had suggested pre-fabricated ports. They found me, but I couldn't return because of this illness of my son.

"The next man I was contacted by was Bert Perkins. He was then Executive Vice President of Morrison-Knudsen. . . . Another tre-

mendous fellow. Bert came to Houston to see me. Asked me if I'd go with him to Vietnam to be his deputy. He would be the Resident Partner and I would be the Assistant Resident Partner and see what we could do to straighten this thing out, because it was a Godawful mess. It was just terrible. I agreed to do it. I flew with him back to Honolulu and we met again with the Navy people in Pearl Harbor. Perkins and I flew on to Vietnam.

"In the OICC office in Saigon, RADM Wooding was now the OICC. He said, 'If we built pre-fabricated ports, how would we go about doing it?'

"Well, just with chalk and sketches, we talked it over—RADM Bob Wooding, CDR Neal Clements, Perkins and myself—and it was agreed to cut orders for me to go anywhere in the world to try to see what we could develop.

"We looked at several areas—Taiwan, Philippines, and Singapore. To find a locale for manufacture of pre-fabricated piers. Finally we decided the Philippines would be the logical choice. We planned to use facilities in Manila Bay. So I went to Manila, met the OICC Southwest Pacific, who was CAPT A. C. Gault. He was ending his tour of duty there, and then CDR Jack Fisher was the OICC. They told me to go ahead, get material ordered so we could move ahead on this construction.

"I returned to Houston to accomplish this. I was unfamiliar, never had worked for the government before. I didn't understand government procedures or know what I was supposed to do, or what I was supposed to follow. I just thought we had to do something in a hurry and I broke probably every rule in the book. But I called several heads of oil companies in Houston who were friends of mine. Told them I needed materials and they made it available on the basis that the U.S. Navy would replace this material in new kind later. They gave us immediate shipment of materials and I loaded two shiploads of materials in Houston and sent it to Manila, with no paperwork, nothing. Meanwhile, the Philippine government had revoked their position and I got frantic notice from the Philippines to come immediately.

"I couldn't. I was busy recruiting people (for the project). When I finally did get to the Philippines, I discovered what had happened. We had two shiploads of material on the way, no place to unload it, because the Philippine government had suddenly retracted their

position. We didn't know where we were going with this material or what we were going to do. I had no paperwork processing of this other than the blanket order that told me I had authority to do all this. So, we looked around.

"So we found this area at Poro Point. (This was the same area which had been earlier planned for use as a transshipment site.) It had been a staging area in the Second World War. Some title remained to the Philippine Government and the U.S. Forces."

* * * * *

Reeves continued: "So we had title there, but we could not demolish any buildings that were on the site. . . . It was a most complicated arrangement. But that's all we had. We moved in and built the pier to unload the steel and diverted the ships to Poro Point. They had never heard of this place, but they came in, discharged their cargo on barges, and we unloaded and stocked this material.

"We unloaded cargo on the dock and just stocked it out in the open fields. We'd find a vacant field, and we'd just store a little bit here and a little bit there, wherever we could find places.

"There was serious difference of opinion as to the feasibility of this type of construction among good well-meaning people. They just didn't understand and they didn't believe that it could be done."

Reeves had considerable trouble not only with the Marine construction superintendents but even with experienced men who had engineering backgrounds. Because of the difficulty, he decided to recruit his force of engineers and superintendents from the youngest and most liberally inclined engineering people. "I went to all the universities in the Southwest: Rice, University of Texas, Texas Tech and Texas A & M, and the professors kindly let me interrupt the classes and appeal to young men to come with me to Vietnam to work on the port project. I hired these young men and we made it.

"We'd fly these young men to a site, as we did at Da Nang, and they made all the site surveys and plans. All construction jobs are difficult to a degree, but this looked like a hopeless task. It looked

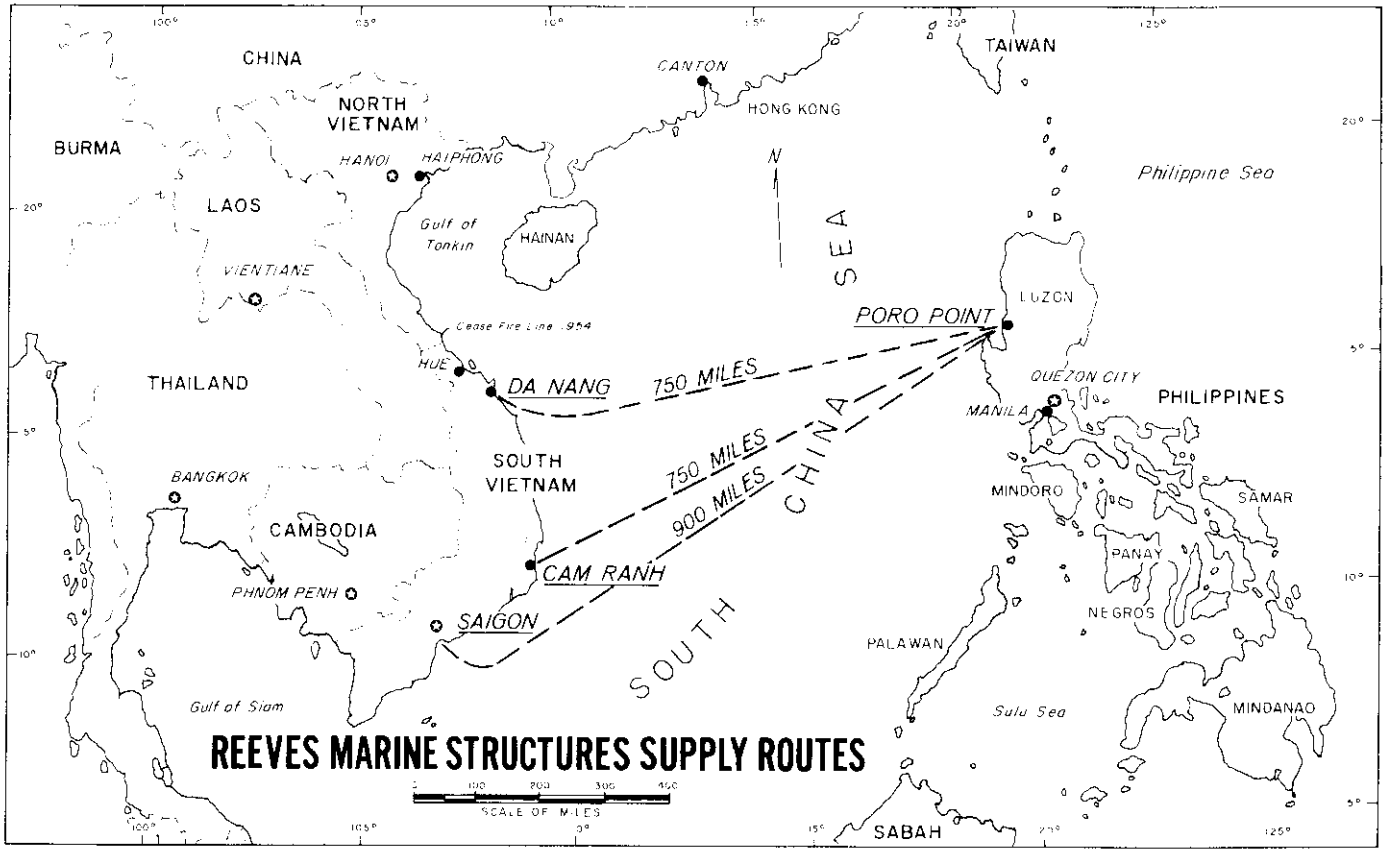

CHINA
NORTH VIETNAM
BURMA
HANOI
HAIPHONG
CANTON
HONG KONG
TAIWAN
Philippine Sea
LAOS
Gulf of Tonkin
HAINAN
SEA
VIENTIANE
Cease Fire Line - 1954
LUZON
PORO POINT
HUE
DA NANG
750 MILES
THAILAND
QUEZON CITY
PHILIPPINES
MANILA
SOUTH VIETNAM
750 MILES
900 MILES
BANGKOK
CAMBODIA
MINDORO
SAMAR
CAM RANH
PANAY
PHNOM PENH
SAIGON
NEGROS
SOUTH CHINA
PALAWAN
Gulf of Siam
Sulu Sea
MINDANAO
SABAH
REEVES MARINE STRUCTURES SUPPLY ROUTES
SCALE OF MILES

FIGURE 16

like everything you were going to do was going to turn out to be a disaster in spite of everything you *could* do. The Philippine government had revoked us so we got kicked out of Manila, we lost our base, we had no source of supply of people who had skills. So we had to train workers, Filipinos, to be welders and riggers. These people were just local workers, farmers and rice growers, coconut farmers and whatnot. At peak effort we had 914 Filipinos at Poro Point."

The central nut of the Reeves pier problem was an engineering one, which was the item which had given the "old superintendents" all of their doubts and misgivings. Reeves summed up: "The basic problem is the construction technique of how you install these jacket template structures. They say the accepted technique, and the one still used, is to take these jacket templates out and place them on the ocean floor and then drive the piling through these jacket legs. Now in placing them on the bottom, the bottom is uneven so these structures lean over a little bit, or move around slightly. A foot or two doesn't really matter if you're only building one template. But when you're having to build dozens of them and have them line up so that the wharf doesn't zigzag, you have to have a smooth, continuous face for the ship. And this is where they just didn't believe that you could place these templates, particularly not without large derrick barges. They said you're going to need a big derrick barge to move in here and handle this type of construction, rather than some little old makeshift equipment.

"The technique we used, instead of placing the templates on the ocean floor (was) we held the templates off the ocean floor, used a spacer template to position and hold the template in place, and drove the corner piles in place. Then, when the corner piles were in place, we lowered the template down onto the ocean floor and it couldn't possibly be out of position; and then you just finished up the interior piles and moved the spacer template and just continued to work."

Reeves went to Poro Point March 1st, 1966. By May 1st, 1966, the facility was in full operation, fabricating the structural steel and pipe which Reeves had secured from his Texas oil friends into sections for two 90 by 600 foot cargo piers, for the Da Nang Port.

As a preliminary in each major port location, much dredging had to be done. The dredge which did the job for the three ocean piers at Da Nang was the JAMAICA BAY. The dredge spoil material was

placed behind a sheet pile bulkhead to develop a staging area inboard of the planned pier location.

After the dredge had finished its work, Reeves went down in a bathing suit, with a face mask, and inspected the bottom. What he saw was most disquieting. The bottom surface was undulant, with many, too many, knobs and hills. "That's why we knew we could never fix these templates on the bottom using the established techniques, so we had to use this other method."

The idea of suspending the templates off the bottom and measuring the pile driving distances with a spacer template was evolved by Reeves, his young assistant, Pat H. Moore, and the Marine construction foreman, Harold Culp. Reeves commented: "You can't say 'It's all my idea, I thought of it all'. You just sit down and talk these problems over and say, 'How are we going to do this?' One fellow would say, 'We might do something like this', draw it up, and if it sounds reasonable, you try it."

Reeves said in summary that many of the construction techniques with the Da Nang port were matters of improvisation, and so were the materials. "You must remember that the situation was so desperate in the I Corps (northern section) at this time (as late as December of 1965), they were saying, 'Get a port built if it just lasts a year.'

"Still, you listen to what they're telling you, but you still know you have to build the best damn piers that you can build. Because you know you're spending the government's money and you want to do something that's going to be a good job."

And, Reeves added that in cost, the "Instant Piers" of Da Nang and later Newport, were cheaper than anything comparable would have cost in the United States or Europe.

The manufactured product came remarkably cheap. Reeves summed up: "At the end of the job we had $250 (per ton) for the material, $110 for fabrication and loadout, and $47 for transportation delivered to Vietnam. We jokingly said, at those prices, we could have prefabbed and transported structures anywhere in the world because nobody could beat anything like this."

The total cost, he said, was thus $407, much cheaper than the same product would have been in the U.S.: On the Gulf Coast, $600 to $800 per ton. Cost in Vietnam would have been still less if Reeves had been able to buy comparable steel from Japan, where it could be purchased for $150 per ton.

"The highest priced labor in the Philippines was 91¢ an hour—Class A welder. The productivity of these people was quite good. For example, the fabrication cost of these structures initially—was $190 per ton. That was fabricated, completely welded, loaded out on the barges ready to ship to Vietnam, all sandblasted, painted, everything.

"We steadily dropped our cost, so the last structures we built for Newport averaged out at about $110 per ton. We nearly halved our cost by more efficiency of the people as they learned their jobs."

After the completion of the two Reeves piers at Da Nang, the Poro Point facility worked on pier structures for Newport, a major deep draft port put up within 15 miles of Saigon, to the north on the Saigon River.

This Newport problem, too, was difficult, if not impossible—like the Da Nang job. Such jobs were getting to be routine for Bill Reeves. He remembers talking it over with CDR Neal Clements, the OICC design officer, when the Newport work began.

"Clements, when I phoned him, had this problem. Here's what it looked like. He said, 'My God, we've got to build docks on this river, because this is the only place adjoining a highway for logistical support. It's just a tidal bog. How are we going to accomplish this thing?'

"We decided that what we would do on the river was strike a straight line out there to the depth of water required for the wharf and then build back up to the bank of the river and don't dredge anything. Because anything we would dredge would slip back in just as fast as we could dredge it out. The tides are so tremendous, about a 15-foot tide, and that river is just like a mill race, any dredged channel wouldn't last a month. We did not disturb the natural configuration of the stream—just go out to the depth of water required and say that is your wharf line and build in. That was the idea.

"We had a meeting and it was planned to go to this type of construction. How fast could we do it? We said: 'Well, there were four major berths, we would plan to turn over a berth every 60 days to the military.' That was just the pace of the transport we had from Poro Point. If we had more barges, we could have done it faster, but it was done that way and we turned over the last one a month ahead of schedule. We did the four berths in seven months instead of the eight that was scheduled."

The Da Nang deep water piers were begun on July 6th, 1966, with the second starting August 4th. In September, the first ships were docking at the first of the piers. One month later, Pier Two was operational. The two Reeves piers were operational in October and the DeLong pier was ready in January 1967.

In Cam Ranh Bay, 1966 saw the addition of the four deep-draft DeLong piers to the one shorter (300 feet) deep water pier which had been built in 1963–64 by RMK. The four DeLong piers were finished in January, October (two) and December. For the ammunition pier only, two large dredges, the SWELLMASTER and the L. S. DILLINGHAM excavated 530,000 cubic yards of bottom to clear access. For another Army pier, the 25-inch suction dredge BESS pumped 140,000 cubic yards of earth.

By dint of an all-out effort and the use of maximum available resources, the bottleneck in deep water piers was being alleviated as the year 1966 progressed. It was solved by mid-1967.

* * * * *

The vast effort to build deep sea ports, to build and modernize airfields, and to erect vast areas of housing for newly arriving troops—these were only the major facets to a multi-pronged, ultra-complex building effort.

One of the first keys to opening any large contractor construction effort is the "blueprint echelon", the engineering and design firms. In April of 1965 there were only two such Architect and Engineering companies with offices in Saigon. These were branch offices, local branches of two of the seven A & E firms with headquarters in Bangkok.

But as the construction effort focused on the burgeoning center in Saigon, the number of these all-essential design companies increased to 15 in April of 1966, 23 in September of that year and 34 in December of 1966. This was the peak for the war, with more than 1,100 U.S., Third Country Nationals and Vietnamese employees. We have earlier discussed the influence of the existence of design offices on the decision to maintain the Navy's construction office in Vietnam as a DOICC until 1 July, 1965.

The importance of the A & E firms was central. With the heavy

load of high-priority building projects approved for all the Services and needs constantly changing as the war effort expanded, the load was crushing.

And yet, as 1966 began and the vast expansion of building struck into Vietnam and Thailand, the officers of BUDOCKS were acutely aware that in the midst of all the action, a sober and critical view of the overall management and control system had to be undertaken. That was why, in the first months of '66, the initial steps were taken for setting up a data processing installation at the Saigon headquarters of RMK–BRJ.

On May 1st of 1966, the Bureau of Yards and Docks had been given a new title: Instead of Yards and Docks, it now became "Naval Facilities Engineering Command" (NAVFACENGCOM). The Navy Department had undergone a wide reorganization in April, and this change was a part of the larger change. The mission of the new NAVFAC was the same.

RADM Walter M. Enger, then Vice Commander of NAVFACENGCOM and later Commander, summed up the concern over management of the Southeast Asia construction efforts:

"During my first trip, which was in the Spring of '66, the thing that I noted was the lack of control of our material and equipment. When I say lack of control, I'm not criticizing. This was something we had known was probably going to happen. And I'm sure that the minutes of our Spring '66 meeting with the contractor will show that one of the items that we laid great stress on was that we must get control of our material and equipment as quickly as we can.

"We had almost an open beach operation and it was obvious that we did not have an inventory because the contractor could not be expected to have really inventoried and received all these materials. He was, in fact, being denied an opportunity to build the depots and facilities that he needed to do the job properly."

And, as RADM Enger recalled, he was upset during that first visit to Vietnam over the fact that in the MACV priority schedule, the contractor's supply depots and repair facilities needed for successful building operations were given a very low priority.

"As a matter of fact, I spoke to the MACV–DC people on two occasions to express my displeasure that the contractor was being denied a reasonable opportunity to build his depots and equipment repair facilities and proper cantonments for his people.

"And they (the MACV–DC officers) were just as vigorous in their statement that the principal problem was to get the facilities available to the troops. Those (other) things could wait. I guess this is a matter of judgment. I really feel we should have devoted more attention to it initially, and we would have had less trouble in the long run if we had."

* * * * *

By late Spring, 1966, the apparent backlog of work for RMK–BRJ was frighteningly large and those on the using end—those who were waiting—were impatient and brought pressure to bear on the OICC for progress. Frequently these operators were not sensitive to the fact that the contractor could not proceed because of impediments beyond his control (often within the operator's own Service). The new MACV–DC played a major role in this time by sorting out the priorities and relieving some pressure from the OICC-contractor. In NAVFAC Headquarters, and at the Pacific Division, the underlying question of the funding level of the program was being considered by the Southeast Asia Coordinating group under CAPT Lalor. Using some very preliminary cash flow projections and construction time estimates, it appeared that there might not be sufficient funds to complete the entire program. There was insufficient evidence yet, however, to suggest any drastic action in Vietnam, so it was decided to wait until the contractor had sufficient designs on hand to price out the program. The contractor was prepared to talk total probable cost in June 1966, and when the OICC applied the best estimate of the burden to the estimated direct project costs, the magnitude of the short fall was clear. It would require some $200 million more to finish everything the Services had requested at the scope now designed.

As the nature of the problem emerged, it became clear that an imbalance existed among the resources needed to accomplish the construction. Materials and equipment had been ordered on the basis of a $1.00 billion program, but before its specific nature had been defined—and some of this material was to be of restricted use because of the change in construction standards. The reduction of the

program to the $800 million level had reduced the funds available for additional procurement, but, more importantly, for labor costs. This was further complicated by the lost labor production resulting from the "churn" present in the program and from the fact that much of the large backlog was not usable. It was clear then that the labor force could not be held at the high level (51,044) of July '66 without additional money, and that if the labor force were to be sharply reduced, urgent projects would be seriously delayed and that much of the equipment procured in such urgency would be underutilized.

In the absence of a clear understanding of how we got where we were by any of the major participants, the OICC and contractor were the first to draw criticism of high costs and mismanagement. It was natural for a Service sponsor to be alarmed when he suddenly learned that there was not enough money to finish his program, and when he saw burden rate adjustments wipe out projects which were designed, funded and ready to go. These were grim days when it was hard to concentrate on real ongoing problems and not spend unreasonable periods defending the OICC/RMK–BRJ position with angry customers.

CHAPTER FIFTEEN

High Gear at Last

As the building program zoomed into highest gear, a new wave of personnel came down from Washington to provide greater depth and experience in the OICC organization. In addition, the construction program was attracting the attention of the top level government watchdogs—the General Accounting Office—and a resident office was set up in Saigon. One of the new officers was the Chief of Staff, CAPT W. R. Rogers.

Data processing equipment was still being installed at the RMK–BRJ headquarters at No. 2 Duy Tan in Saigon's center, and it was recognized that the management system was still in need of large-scale reorganization.

CAPT Paul E. "Pablo" Seufer came from NAVFAC headquarters to relieve RADM Wooding as OICC Saigon in March 1966. RADM Wooding became the first DEPSEA. We earlier discussed BUDOCK's decision to create a PACDIV Deputy for Southeast Asia in Saigon.

At the same time, March of 1966, the first Director of Construction, BRIG GEN Dunn, arrived.

Seufer remembers a preliminary meeting in the Yards and Docks headquarters, on New Year's Day, 1966, when he was Director of Facilities Engineering. Present at the meeting were RADM Enger, then Deputy Chief of Yards and Docks, CAPT Foster Lalor—head of the new Southeast Asia coordinating group, and also CDR Robert F. Jortberg. Jortberg was then the "detailer" who made officer personnel assignments. The meeting focused on many problems, but principally, how could the OICC be strengthened—how could BUDOCKS improve its capability to get the new, urgent, massive program built. The decision to create the DEPSEA was finalized at that meeting. Captain Seufer and CDR Jortberg flew to Saigon together later in January of 1966. RADM Enger, the Vice

Commander of the newly named Naval Facilities Engineering Command, followed in April.

* * * * *

The RMK–BRJ Chief, Bert Perkins, remembers the momentous days when a new order was founded in the conduct of affairs of the OICC-consortium in Saigon. "When we first started, we were getting the jobs done. That's what I called the 'Admiral Wooding regime.' We kicked it off and went, knowing we had some consequences that we had to face, downstream. We knew our accountability wasn't good. We knew some of these things we were going to be in trouble for. Then the next phase came. Now we had to tighten up. He (the MACV–DC or Director of Construction) understood, his staff understood it, I understood it, and my staff understood.

"So then we started with: 'Well, we've got this thing off the ground, now we're going to tighten up.'

"That was the time Wooding was leaving. Seufer was the OICC; Wooding was still there but he was in charge of the whole thing, including Seabees. Then he left and Seufer took over, and Smith (RADM Spencer R. Smith) came out after him. Well, right during that period we had the influx of Navy captains."

The creation of the DIRCON positions created some organization and communications problems in the early period. The Naval officers, particularly after the positions had been staffed by Captains, were looked upon by the OICC to be in charge of the operations in their geographical area. They were to know what was going on and what problems existed, or were possible. They were looked upon to solve these problems and get the program moving. But the contractor site managers reported back to the contractor's headquarters in Saigon, and from time to time were unwilling to take direction or guidance from the DIRCON. In some cases the DIRCON would want the site manager to proceed differently than his instructions from Saigon. This did cause some confusion and flared into bitterness in a few isolated instances. In retrospect, this built-in irritant

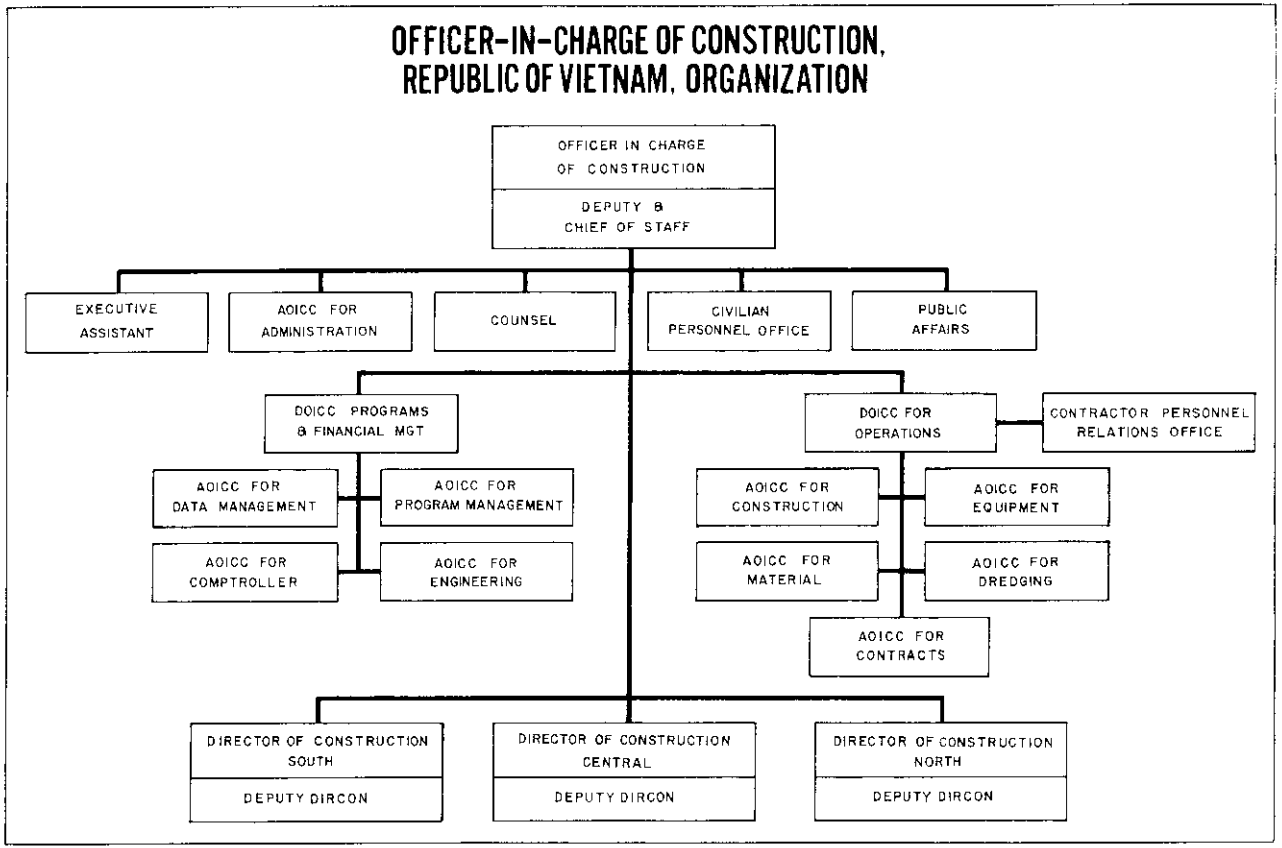

OFFICER-IN-CHARGE OF CONSTRUCTION, REPUBLIC OF VIETNAM, ORGANIZATION
OFFICER IN CHARGE OF CONSTRUCTION
DEPUTY & CHIEF OF STAFF
EXECUTIVE ASSISTANT
AOICC FOR ADMINISTRATION
COUNSEL
CIVILIAN PERSONNEL OFFICE
PUBLIC AFFAIRS
DOICC PROGRAMS & FINANCIAL MGT
DOICC FOR OPERATIONS
CONTRACTOR PERSONNEL RELATIONS OFFICE
AOICC FOR DATA MANAGEMENT
AOICC FOR PROGRAM MANAGEMENT
AOICC FOR COMPTROLLER
AOICC FOR ENGINEERING
AOICC FOR CONSTRUCTION
AOICC FOR EQUIPMENT
AOICC FOR MATERIAL
AOICC FOR DREDGING
AOICC FOR CONTRACTS
DIRECTOR OF CONSTRUCTION SOUTH
DEPUTY DIRCON
DIRECTOR OF CONSTRUCTION CENTRAL
DEPUTY DIRCON
DIRECTOR OF CONSTRUCTION NORTH
DEPUTY DIRCON

FIGURE 17

probably was a good thing. It kept both sides of the team effort alert and knowledgeable. There were certainly few "love-ins" which could lead to complacency.

* * * * *

It was here, in the second half of 1966, before the impact of the $200 million under-funding caught up with the OICC, that most of the outstanding building miracles which so transformed the face of South Vietnam were taking shape.

The most outstanding agglomerations of production came in the port cities, where ports, troop cantonments and airbases were all erected with the maximum speed. All three classes of building—ports, cantonments and airbases—were pushed by their respective "customers." Thus, in mid-1966, Saigon, Cam Ranh, and Da Nang in Vietnam, and U Tapao and Sattahip, Thailand, became the busiest building centers of the world.

The most ambitious (and expensive) part of the building in the Saigon vicinity in '66 was the construction of the pier and wharf complex at Newport, which we have already described in connection with H. W. "Bill" Reeves' work to provide the "Ports-a-Go-Go." The first effort of the Newport project was to provide, during the Summer and Fall months of '66, four barge wharves, 60 by 260 feet, two LST slips with ramps, and an LCM and an LSV ramp.

Work on the Reeves piers continued through the Fall and Winter months. The berths were finished in July of 1967. The pier structure included the four berths with a total length of 2,400 feet, and two transit sheds, each of which consisted of four interconnected buildings 120 by 200, with a total area of 290,000 square feet. That was almost 16 acres of floor space—about half of the covered area of the Pentagon.

One of the RMK–BRJ training schools was opened at Newport to teach English and the techniques of engineering and welding to chosen Vietnamese employees.

And at the peak of the construction effort at Newport, 1,800

SUMMARY OF CONSTRUCTION RESOURCES

ARMY	NAVY	AIR FORCE	OTHER
TROOPS			
a. Two engineer brigades consisting of 13 combat battalions and 15 construction battalions. (Peak strength about 30,100) b. Various engineer utility detachments with the primary mission of facilities maintenance. (Peak strength about 1,450)	a. A Seabee brigade consisting of 12 NMCBs. (Peak strength about 10,000) b. Public Works forces assigned to the Naval Support Activities at Da Nang and Saigon. (Peak strength about 2,580)	a. Five heavy repair. (RED HORSE) squadrons. (Peak strength about 2,000) b. Base Civil Engineering forces at each of the Air Force bases to accomplish facilities maintenance. (Peak strength about 4,500) c. Prime BEEF teams -- small teams of Air Force officers and men deployed to RVN on a temporary duty basis to accomplish specific construction projects. (O&M funded)	a. Self-help -- widely used by all services. b. Divisional Army and Marine Corps engineer battalions and Marine Corps Fleet Marine Force battalions assigned to III MAF. (Not included in troop strengths of the three other Services)
CONTRACTORS			
a. Pacific Architects and Engineers (PA&E) -- the Army's facilities maintenance contractor. (Peak strength about 24,000) b. Vinnel Corporation -- contractor for installation, operation, and maintenance of electrical systems -- primarily T-2 tankers. c. DeLong Corporation -- installation and rehabilitation of DeLong Piers.	a. RMK-BRJ -- the main construction contractor in RVN operating under the supervision of the Navy Officer in Charge of Construction (OICC). (Peak strength about 51,000) b. Philco-Ford -- contractor providing a skilled third-country national (TCN) labor force to the Public Works activities. This force together with the Seabees organic to the Public Works activities and a force of local nationals made up the Navy's facilities maintenance work force. (Peak strength about 6,000)	a. Walter Kidde -- turnkey contractor for Tuy Hoa Air Base.	a. Various turnkey contractors for communications facilities -- included Page, RCA, and Philco. b. Local contracting authority -- primarily funded with AID funds -- used extensively by the Army and the Navy to construct advisor facilities.

FIGURE 18

Vietnamese employees were working under the supervision of 210 Americans and Third Country Nationals. Two ten-hour shifts were worked per day, seven days a week. The cost of the installation was $38 million. But Newport was only one of the projects that made Saigon the greatest center of building activity in Southeast Asia in those peak years of the contractor's effort—'66 stretching into '67.

Another vast center of military building began to emerge at Long Binh in July–September, 1966: It was the same kind of building complex as the Army was putting up at Tan Thuan, in the eastern suburbs of Saigon on the Saigon River bank.

Long Binh was to be the major Army storage and depot headquarters and eventually was to develop into an endless complex of Army office, barracks and maintenance buildings. It was a tremendous area, 18 square miles in size, at the juncture of national highways Number 1 and 15, fifteen miles northwest of Saigon. Even the initial funding was sizeable: $59 million. It had a very high priority.

The swampy ground needed 80,000 cubic yards of laterite fill to begin with. The fill job, the administration building and small warehouses (53,000 square feet of warehousing) and the first roads were finished by September, 1966.

The move to Long Binh was part of a concerted MACV effort to transfer military presence away from Saigon. Fewer U.S. uniforms were to be seen in that city. The new MACV headquarters at the "Little Pentagon" at Tan Son Nhut was another consequence of the same trend.

As of November of 1966, the vast job of clearing and grubbing and building roadways over an expanse of 800 acres of jungle was the principal sign of progress visible. The Long Binh complex was embryonic in late '66, and it wasn't until the end of the next year, '67, that the overall shape became apparent.

Another large terminal was worked into shape at Thu Duc near Saigon, a vast storage and maintenance area for RMK–BRJ's own use. This long, cigar-shaped island, originally marshland like the surrounding rice paddies, was filled to make it viable. The initial plans, which had been developed in early 1966, called for 4.4 million square feet of stabilized area, 38,000 square feet of covered shop area, and 160,000 square feet of warehouses.

Filling operations were started in early '66, with the initial fill material being hauled from an area eight miles up the Bien Hoa highway, the vicinity of the University Quarry (SUMPCO).

The fill job involved the hauling of 1.2 million cubic yards of sub-base material (sand) and 240,000 cubic yards of rock for surfacing the area.

But the flow of fill from the quarry was impeded by high priority needs of the nearby Newport project. All RMK–BRJ trucks in the Saigon area were hauling to that "Ports-a-Go-Go" project. So, as in the case of Newport and the Army depots, much of the base material for filling the island was furnished by subcontractors, the material delivered by sampans.

In the Summer months, the first four administrative buildings were under construction, and authorization for another 23 buildings came through in September of 1966.

Three huge equipment repair shops were under construction at the same time, and concurrently, three 70-foot by 170-foot prefab warehouse buildings were put up during '66, finishing in December.

Thu Duc was going to be the main trans-shipping point for the rock and sub-base material coming out of the SUMPCO quarry. So a barge anchorage, with floating piers to allow for the 15-foot tides of the river at this point, was completed.

Incidentally, the SUMPCO quarry was opened in this hot VC area at first in October of 1965, then halted because of legal action taken by Vietnamese property owners. Premier Ky finally moved in and led an effort by the Vietnamese Joint Chiefs of Staff in January of 1966 to expropriate the area.

In those early months of 1966, the area was still insecure, and had not been physically cleared by troops. On February 10th, an American employee taking part in the clearing of brush, Brian B. Foster, was killed by a group of Viet Cong. After this episode, all workers in outlying zones were accompanied by troops.

In February of 1966, the first of SUMPCO's rock-crushing plants was operating. A two-shift operation was started in April 1966. Ambitious plans to expand the crushing operation were held up in June by a strike of workers who went out in sympathy with striking workers in Saigon, for three weeks. But in October, a larger crusher with 42 inch by 48 inch jaws was installed. And a month later, an imposing 400-ton per hour crusher was installed. By year's end,

production of rock was nearing 10,000 tons per day. It hit its record production on January 23rd, 1967, with a total production of more than 12,000 tons for the day.

In January, another large improvement was added to the University quarry site, a plant for production of hot-mix asphalt and a concrete batch plant.

Several other spectacular building projects in the Saigon vicinity were being rushed to completion at this time. One of the most spectacular was to be the new U.S. Embassy building in Saigon. Held up by changes of design, strikes, and practically every other ailment that a building project can be heir to, the Embassy structure had been started at last. Instructions were to finish the first three stories and leave the fourth floor unfinished.

The principal reason for all the indecision and change-of-mind was the degree of risk of bombing and assault to which the Embassay was known to be heir. Another factor was the most important one—the shortage of enough funds for the kind of building the "customer" wanted.

The previous bombing of the leased building on the Street of Flowers (Dai Lo Nguyen Hue) in downtown Saigon had left diplomats anxious to project themselves against a repetition. It was not until February 25th, 1967 that a Notice-To-Proceed was issued to RMK–BRJ to complete the building. Two more floors would be added and the new penthouse site with a landing pad for a helicopter on its roof. By that time, funds had come through, too.

At the same time, another large-scale project, for the building of a large new MACV headquarters in the enclave of the Tan Son Nhut airport, was being undertaken. It was to build a "Little Pentagon", or "Pentagon East", in an effort to centralize all of the divisions of the MACV staff under one roof, and not directly in downtown Saigon as it had been in the old French buildings on Rue Pasteur.

The "Little Pentagon" was a $25 million project with more than 12 acres of enclosed floor space, which makes it more than a third of the size of the Pentagon in Washington (34 acres).

The parts of the new MACV headquarters included a headquarters building, a barracks and messhall, a Headquarters Commandant's offices, and maintenance buildings: power plant, a "reefer" or refrigeration storage building and a telephone exchange, as well as a warehouse building.

Work on the Little Pentagon started with a plan to build the headquarters on a site in west Saigon, in the Chinese quarter, Cholon, in February.

However, because of protests from the Cholon inhabitants the work was halted in May, and plans transferred to the area on the northern edge of the Tan Son Nhut airbase. The first surveying started on July 1st. But the manpower buildup was slow because of strict security requirements for construction workers to be hired for the site.

But with this major project, too, the building operations did not start functioning until the late Fall of '66, October–November–December. This project, too, did not begin to look like its finished form until the early months of 1967.

The same was true of the military hospital which was to be remodelled at the northern gate of Tan Son Nhut airbase.

One Saigon building complex which was started in '66 and occupied that year was the first television station in Saigon, which was built for the Armed Forces Radio Television Service. Although constructed for slightly more than a million dollars, this radio and television installation brought many benefits way beyond its cost. It had wide viewership among the Vietnamese people, thousands of whom hastened to buy cheap Japanese-made television sets so they could follow the American programs—and incidentally learn English the painless way, via GUNSMOKE and LUCY. Many Viet Cong defectors also said their military resolution had been softened by viewing our TV station.

At Tan Son Nhut airfield the principal improvement scheduled was to build a 10,000 foot concrete runway parallel to the existing runway. This was in line with the development of air traffic in Tan Son Nhut to such a high level of density that it was second only to O'Hare Airfield in Chicago as the busiest of the world, even before the second runway was built.

But the effort to build a parallel runway, starting in April of 1966, was held up by a frequent building hazard in the construction of airfields: the discovery that the path of the runway would overrun a Vietnamese cemetery. So long negotiations had to be undertaken to settle claims with the descendants of the deceased. By December of 1966, excavation work for the new runway was only three percent complete.

The dispute between the OICC–U.S. Air Force and the owners

of graves blocking the building path of the new runway was suddenly settled through a surprising development in December of 1966.

At that time, after long and fruitless negotiations between RMK-BRJ and the Vietnamese authorities for the removal of some 200 graves, resistance of the grave owners was overcome very rapidly on December 4th when a Viet Cong guerrilla force infilterated Tan Son Nhut and had to be driven out of their hideaways, many of which were in the cemetery confines. Within a few days after this incident, the Vietnamese Army appeared on the scene with bulldozers, and no explanations, and abruptly did away with the trouble-making tombstones.

The Bien Hoa airfield, a principal new airbase of the U. S. Air Force, should be included in the notes on Saigon building projects, since it was constructed only 20 miles from downtown Saigon, close enough to be called a Saigon airbase.

Here, too, a recognition of the busyness of the airbase was afforded in a Notice-To-Proceed with a new 10,000 foot concrete runway parallel to the one built by RMK in 1962–63, and also 22,000 square feet of concrete aprons and taxiways.

Only fifty percent of the building plans had been received by the middle of June. And an abrupt cancellation came from the U. S. Air Force in August. The final authorization to build the second runway did not arrive until April of 1967. The work was 25 percent done by June of 1967.

It was the usual history of a building project: For many months, while the architect-engineer stage is being planned, changed, and re-argued, nothing seems to happen at the building site. Then, a long seige of clearing the land, first the legal clearance, then the physical clearance, and in the case of Vietnam, usually a large fill job as so much of the level land is swamps or rice paddies—and it is not till many months later that something that looks like a building project appears, despite all the priorities and rush-orders that are issued.

In Bien Hoa, the building pattern followed that norm for Vietnam: Quarry sites, with their attendant rock crushers, had to be first on the priority lists, and since the need for housing for troops was always a top priority, those, too, appeared early. A large mess-hall, big enough for 1,500 men, was started in July, 1966, and finished in December.

The other two major building centers in South Vietnam had approximately the same mix of construction projects in the busy building period of 1966, extending usually into 1967. They were Da Nang, the principal port and airbase center of the north, and Cam Ranh, the same for the intervening ground.

We have followed the busy early building record of Da Nang, the port and airbase center of the northern part of South Vietnam, up to the epoch-making visit of Secretary McNamara in late November of 1965.

The "Instant Pier" accomplishments of the men who built the Da Nang port were especially remarkable considering the violent cycle of civil discord which was shaking Da Nang and Hue that year.

In early 1966, shortly after the Tet or Vietnamese New Year festivities which come early in our calendar, a revolt of Buddhists and other dissident groups had broken out in Da Nang.

Both in Da Nang and in Hue, the city which many Vietnamese called the "Intellectual Capital of the North", Buddhist and student protest groups staged demonstrations against the government of Premier Nguyen Cao Ky. The commander of the military in that area, LTG Nguyen Chanh Thi, was removed by Premier Ky for being too permissive with the Buddhist-student protest movement, which had demonstrated violently. Premier Ky flew to Da Nang in an effort to quell the disturbances, which were greatly assisting the Viet Cong.

Movements of the U. S. Marines in the I Corps area were seriously impeded. In one such confrontation, at the bridge across the Da Nang River, LT GEN Lewis W. Walt, the commander of all Marines in Vietnam, was challenged in the middle of the Da Nang River Bridge by a protesting Buddhist leader. The suicidally inclined rebel leader threatened he would blow up the bridge, with himself and GEN Walt on it, unless GEN Walt agreed to his demands. He said that demolition charges had been placed beneath the bridge and that he would not hesitate to detonate them and bring down the span on which they were standing, if GEN Walt did not accede to his requests.

The iron-nerved GEN Walt continued the negotiations, while the rebel leader continued his threats. Walt prolonged negotiations as long as possible while his nervous opponent demanded immediate assent and the end of negotiations, or there would be an immediate

detonation. At last, Walt told him to go ahead and blow the bridge.

The rebel leader gave the signal to detonate the charges, but no sound of explosion filled that tense silence. During negotiations, GEN Walt had sent a sapper crew to disconnect the explosives underneath the span. But he was as relieved as the others on the bridge that there was no detonation, and nearly as surprised. He had not known whether the sappers he had sent to disconnect the explosives had been allowed time enough to finish their work.

With such disturbances as these going on, it was small wonder that the RMK–BRJ constructors made slow progress with their project of building a Navy Support Activity base in East Da Nang.

The work on this project, and a materials depot and camp area for the contractor, had been authorized in November of 1965, but every building site had been turned down by the city officials. At last, an area agreeable to the mayor and the Navy was selected, in January 1966.

That month, the needed earth moving equipment was finally returned from Cam Ranh and grading of the site began. The work had to be stopped on February 9th to allow the owner of the property to take out some palm trees. Then, it stopped once more from February 23rd to March 9th, because civil discord had shut off the fuel supply in the Da Nang vicinity. On March 10th, the chief of the local village, armed with a rifle, halted the operator of a bulldozer on the building site until money was produced to satisfy his personal claims. On the 13th of March, the Vietnamese employees went on strike. On the 23rd, work began again as Seabees moved in to help and that day the first concrete slab was poured.

Numerous firefights took place with the Viet Cong, during the nights of those Summer months. After a pitched battle across the road from the constructors' trailer camp (23 trailers), a handful of the supervisors decided that life at the military frontier was not for them and left for Saigon. The vast majority kept on the job and finished it and the assignments which followed.

Work on the deep water port for Da Nang, farther north on the shore of the East Da Nang peninsula, began in March. It was the preparation for the "Instant Piers." This "Instant Port" was known from the beginning to be the largest single project tackled in the Da Nang region.

The first task was to dredge an entrance channel to the port facility at the cove where the port was to be located. This would be dredged to a depth of 39 feet below sea level, and it would include a turning basin so that large ships could be maneuvered. It was decided to use the dredged material to fill a nearby tidal swamp 45 acres across, to make brand new land, a fine staging area for supplies. Then, a 2,000 foot sheet-piling bulkhead was to be built. This would serve as an approach ground for the two Reeves piers and the DeLong pier to be installed by the Army Engineers.

The dredge JAMAICA BAY, one of the world's largest, with a 30-inch intake, began operating on March 21st, 1966. It continued work until August 20th, when transferred to the project at My Tho, in the Delta. By then, it had excavated 3.5 million cubic yards of bottom sand.

But this work did not proceed smoothly. At the beginning of construction of the bulkhead, it was discovered that the line indicated for the bulkhead was filled with heavy boulders. So the outer line of the bulkhead was relocated 160 feet farther towards the sea. The relocated bulkhead line for the third pier also encountered boulders and coral, and drilling and blasting operations had to be undertaken there.

After the relocation of the JAMAICA BAY, the slightly smaller dredge L. S. DILLINGHAM took over. It worked until November 30th. The DILLINGHAM dredged 750,000 cubic yards on the project. The hopper dredge SWELLMASTER came in during November to assist with the cleanup work, and it removed another 300,000 cubic yards of bottom sand before being transferred. Thus, the total amount of bottom sand excavated by the three dredges totalled 4.55 million cubic yards in Da Nang's "Go-Go" deep sea port.

The driving of the sheet-pile to form the bulkhead began on June 9th, 1966 and it was still continuing when the installation of the first of the Reeves piers began on July 6th.

Under the driving leadership of Reeves and his crew of engineers, the Reeves piers were finished, the first by September 1st, the second by October 8th. The official dedication ceremony for the port was held October 15th, 1966.

The largest projects of that period, next to the Instant Piers, were the Da Nang airbases, Da Nang Main and the Marble Moun-

tain Air Facility. The big job at the Da Nang airbase was the building of a parallel runway and taxiway to double the capacity of the base. The runway had been started in late '65 and was finished by the middle of 1966.

The Marble Mountain Air Facility included a 2,600 foot runway and a huge parking apron, both initially of Pierced Steel Planking. They were later expanded and augmented by asphalt and soil cement finish, until their combined area was the equivalent of 35 football fields. It was mainly a helicopter base.

* * * * *

Traffic in Da Nang airport became the third busiest in the world (third behind Chicago and Saigon) by the end of '66, and there were vast systems for fuel storage. The modern military effort lives on POL: petrol (i.e. gasoline and jet fuel), oil and lubricants. POL is mother's milk to it, especially for air units. The 160,000 barrel tank farm on the northwest corner of the airbase was begun June 2nd and finished by the end of November.

One major Da Nang facility which profited directly from the Reeves Instant Pier technology was the East Da Nang Bridge. This 1,700 foot prefabricated steel structure was extremely vital in supplying the northern reaches of South Vietnam because there was only one bridge across the Da Nang River, and that was narrow and slow. With the new deep water port under development in East Da Nang, there would be a crying need of another bridge supply route.

In June of 1966 the Navy gave the contractor an NTP to start this project. The first work was to dredge fill for the approaches. The bridge piers and deck sections were to be fabricated at the RMK–BRJ establishment at Poro Point, Philippines (under the leadership of Reeves), and towed to Da Nang. The same technique used at the Port was used for this bridge.

The bridge was to be located beside and parallel to the existing military bridge which was a narrow Eiffel structure with one span

of the Bailey type. The Bailey type span was a repair of a damaged eiffel section.

There was a delay in the arrival of the steel for the deck sections from the suppliers in the United States to the Poro Point installation, so the corresponding shipments of the bridge sections were delayed. Hence, the work continued through the Winter months of '66 and into '67. The bridge was completed in June 1967.

Equally vital were the roads from the deep water piers at Observation Point, and the LST ramps constructed earlier near the bridges, on to the depots and troop cantonments inland. The old French roads of macadam construction were subjected, once the piers were open, to a back-breaking load. The traffic density was more than 300 trucks and other vehicles per hour during the day.

The contractor and OICC were most anxious to rebuild and widen the road before the advent of the northeast rainy monsoon in September–October. But any repair program had to wait on the completion of a new quarry in East Da Nang and the installation of a 400-ton per hour crusher.

Base rock from the quarry was available in late August, and the widening program got into gear at that time. The actual paving didn't start until early December 1966, when the quarry's hot-mix plant was finished. And it wasn't until January of 1967 that the basic binder course was finished—and even this had a section near the new Da Nang Bridge still to be finished. But the RMK–BRJ builders always contended that the $1.5 million expended on this road was the most beneficial single contract to the war effort that they could remember.

* * * * *

The Naval Support Activity underwent a wide expansion as the last half of 1966 progressed. Much construction was at Camp Tien Sha in East Da Nang. A whole new series of barracks were to be erected, beginning on July 20th, 1966. There were to be 25 two-story barracks buildings, water, sewer and electrical systems, and a gymnasium.

In this work, the sewage system was most troublesome. During the rainy monsoon the water table was a bare two feet below the ground surface. The architect-engineer drew designs for cuts as deep as 25 feet, and because of the abundant water, progress was slow, averaging only about 700 feet a month.

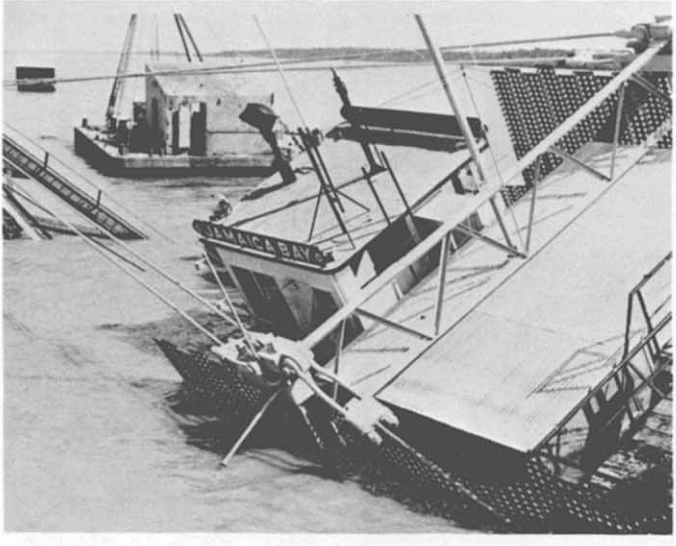
Much of this Da Nang work was very close to concentrations of VC, especially in the Marble Mountain area where work crews had considerable difficulty, particularly with road mines. Two men were killed and many injured when a five-ton truck and a rubber tired bulldozer were destroyed.

The convulsive efforts in the areas to the South are covered in the following chapter.

33. Pipeline Dredge: SEABEE I. The 20-inch pipeline dredge SEABEE I is clearing the entrance channel to the Han Giang River, at Cua Viet.

34. Sidecaster Dredge: SANDCASTER. The 12-inch sidecaster dredge SANDCASTER removes shoals on the Cua Viet River—less than 5 miles from the DMZ.

35. Pipeline Dredge: HYUN DAI HO NO. I. A 25-inch pipeline dredge, the HYUN DAI HO NO. I, is dredging sand for stockpiling, near Vinh Long.

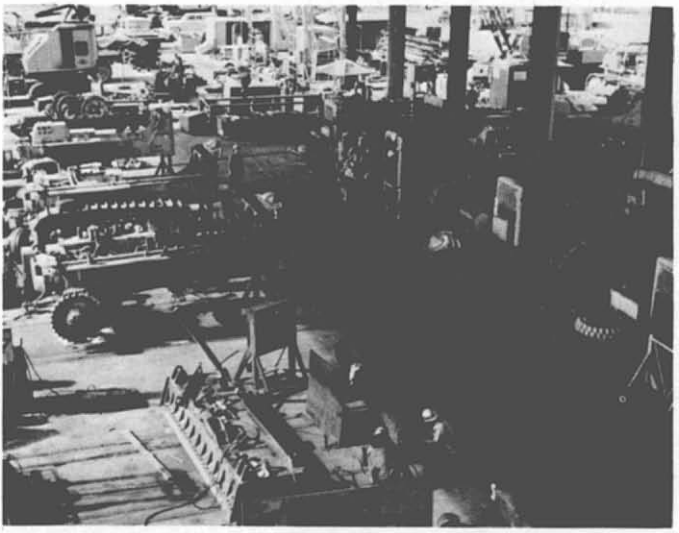


36. Sunken Pipeline Dredge: JAMAICA BAY. On 9 January 1967, the 30-inch pipeline dredge JAMAICA BAY was mined and sunk by the Viet Cong (sappers): two large plastic charges were placed against her hull, one each on the starboard and port sides. The dredge sank immediately, in 20–30 feet of water, listing 60 degrees to the port side. In March 1967, she was salvaged and made ready for tow to Saigon for drydocking. Enroute, she sprung a seam and sank again, just off the port of Vung Tau. Attempts to raise her anew were unsuccessful and she was abandoned.

37. University Quarry—Saigon. This site derived its name from the fact that it was near the future Saigon University. In February 1966, a few months after its opening, the quarry had a 250 tons-per-hour crushing plant in operation, making rock for use throughout the greater Saigon area. In November 1966, a 400 ton-per-hour crusher was added and aggregate production jumped to an average of 6,500 tons per day. In January 1967, a hot-mix asphalt and concrete batch plant were set up. The new diversity of products led to the imposing new site title: "Saigon University Materials Products Company" or, for short: SUMPCO.

38. Da Nang Quarry. This is the East Da Nang crusher and rock loading facility. Mineral products from this quarry were provided to Military Region I.

39. RMK–BRJ Main Office—Saigon. In January 1962, RMK opened a temporary office in the Caravelle Hotel in downtown Saigon. The following month, a permanent office was set up at 2 Duy Tan. With the expansion of operations in 1965 (and the change from RMK to RMK–BRJ), office space became critical. Taking advantage of the high-ceiling, colonial-style construction of the building, resourceful RMK–BRJ engineers worked out details for putting in a second floor in the Main Office.



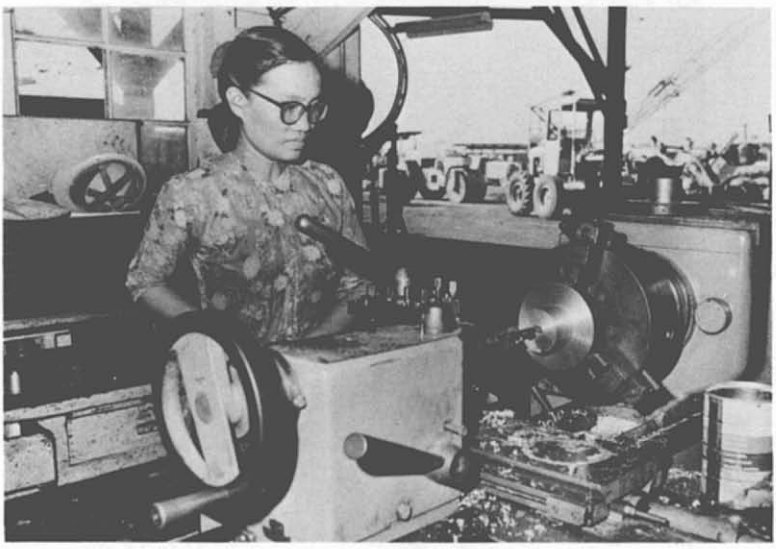
40. Contractor Equipment Repair Shop. In 1964, RMK built the following shops: Carpenter, combination Mechanics and Welding, Electrical, and Plumbing. Millwork, mechanical repairs (as shown in the photo)—for all construction sites throughout the Delta—were accomplished at these shops.

41. Saigon Island Depot (RMK–BRJ). This is Thu Duc Island—one of RMK–BRJ's 3 such depots in South Vietnam. Originally marsh land, this GVN-owned island required filling and stabilizing of 590,000 SY of area, and the hauling of 1,200,000 CY of sub-base material, and 240,000 CY of rock for surfacing the area. The Thu Duc Depot included major repair shops, warehouses, open storage areas, and marine construction facilities.

42. Cam Ranh Depot (RMK–BRJ). This major RMK–BRJ depot was begun in November 1965 with the filling of a spit in Cam Ranh Bay. The waterfront location was chosen so that LSTs and barges could be handled directly. To provide needed additional open storage space, a sand dune east of the spit was levelled and spread out to enlarge the north side of the open storage area.

Photograph by Richard Tregaskis

43. **Beauty and Beast.** At SUMPCO Quarry, north of Saigon, the RMK-BRJ depot, quarry, and training and storage area, comely Vuet Nguyen Thi, 21, operates front-end loader. Here, in 1970, bottom drops hauled sand from the Saigon River. Thi (first name comes last in Vietnam) picked up the sand after the bottom drops dumped it, and piled it.



44. **Trainee Machinist.** Women received full-time training in machinist and welding skills—many to replace males enlisted into military service.

45. **Secretarial Training Class.** At the Saigon Main Office building, classes were held in English, Spelling, Typing, Filing, and Office Procedures.

46. **Trainee Welders.** Men and women were given equal opportunity to learn an occupation. Over 150,000 RMK–BRJ employees were trained by the 3 following methods: (1) on-the-job; (2) part-time formal job-related instruction; (3) full-time formal classroom, shop, or operator instruction.

47. Can Tho By-Pass Road. Early stage of construction of the Can Tho By-Pass Road.

48. Street Repair—Quang Ngai City. Typical scene in the program of street and road upgrade/rehabilitation. This is Tran Hung Dao Street, in Quang Ngai City, in Military Region I.

Photograph by Moana Tregaskis

49. **Beauteous Rod-Women—1970.** At RMK-BRJ bridge construction site near Binh Thanh on Route QL-1, women surveyor assistants work with highway crew. Bridge had been blown by Communists in hotly-contested "Dodge City" (Song Cau) area.

50. An Khe Pass. This is typical of the type of terrain found in the northern area of South Vietnam. An Khe Pass was a muddy, steep, and winding road which was realigned and paved by RMK–BRJ.

51. New Da Nang Bridge. A second Da Nang Bridge was authorized in June 1966, to be built adjacent to the existing bridge which separated Da Nang East from Da Nang West. The new bridge (left, in photo) was designed for multiple parallel bridge spans, each having a 24′ roadway. Only one span was installed; the second span was to be added in the future, if needed. Total length was 1,680 feet between abutments, with 13 piers in the river. The bridge elements were prefabricated at Poro Point, Philippines. Work on the abutments and piers began in September 1967 and the bridge was completed and in use within 10 months.

52. New Da Nang Bridge Detail. Bridge pier protection was undertaken as a deterrent to enemy attempts (by frogmen and floating charges) to destroy or damage the structure. Pier protection included pier lighting and approach lighting; steel bracing to pier structure for added support; and framing, chain link panels, and loosely-placed concertina wire.

53. Bien Hoa Bridge. This is the largest of the 6 bridges which comprised a major bridge building program ($20 million) in the Saigon area. The Bien Hoa span is 2,631 feet long; it crosses the Dong Nai River on QL 1, 17 miles northeast of Saigon. It was started on 15 May 1971 and was completed on 1 May 1972, at a cost of $4.5 million.

54. Nam–O Bridge. The Nam–O Bridge is a combination railroad and highway bridge; it is located 10 miles north of Da Nang, on Route QL–1. It is a vital supply line to Phu Bai and the North. On the night of 13 April 1967, the Viet Cong mined and completely demolished one of the center piers, dropping the ends of two of the bridge's five 140′ steel truss spans. The destroyed pier was replaced by a steel pile jacket pier. The affected spans were repaired as needed and reset in position. Note the interim use of the pontoon bridge.

55. ACTOVRAD Site—Qui Nhon. ACTOVRAD is an acronym for "Accelerated Turnover to the Vietnamese, Radar Site." It is a facet of the program of Vietnamization—the turning-over of combat responsibilities to the ARVN (Armed Forces of the Republic of Vietnam). By inference, this meant the turnover of military bases—such as this radar site at Qui Nhon, in the Central Sector of South Vietnam.

56. ACTOVRAD Site—Da Nang. Among the final projects built by RMK-BRJ was a series of ACTOVRAD (radar) sites strung along high points of the South Vietnam coast and the peaks of nearby islands. This site is atop Monkey Mountain.

57. **U.S. Embassy—Saigon.** Located on Thong Nhut Boulevard, about 4 blocks from Independence Palace, the Vietnamese "White House." Construction of the Embassy started in September 1965 and was completed in 1967. It is a 6-story building with 240 rooms which serve as offices, lobbies, and communication facilities. It has a roof-top helipad.

Photograph by Richard Tregaskis

58. **Beautiful New RMK-BRJ Buildings All Over South Vietnam.** In this case they are new structures for the ARVN National Military Academy, including the library. The scene is Da Lat, the year 1970.

59. Fabrication Yard—Poro Point. Poro Point is located 180 miles north of Manila, on the west coast of Luzon, Philippines. An assembly-line type of operation was employed throughout the length of the Yard. Prefabricated pier and bridge units were fabricated on these assembly lines and railway wheel trucks were used to transport the completed units to the load-out pier, where they were placed on barges for transport to Vietnam. The jacket-templates made at Poro Point were used to build the marine terminal facilities at Newport and the bridges at Da Nang and Cam Ranh Bay.

60. Communications Facility—Nha Trang. In June 1965, RMK began construction of antenna foundations and support buildings for this communications facility at Nha Trang; in July, construction was begun on barracks and messing facilities for U.S. Special Forces. The foundations were completed in July 1965; the cantonment, in January 1966. The electronic phases of the installation were accomplished by Page Communications. Nha Trang was a terminal for voice submarine cable from the Philippines, and a link in a tropospheric scatter radio system.

61. Newport Project Key Personnel. Four key members of the military–civilian construction team responsible for "Newport" were: (for RMK–BRJ) James A. Lilly, General Manager; Bert L. Perkins, Operating Committee Deputy Chairman; (for NAVFAC) LT Paul McCullagh, Resident Officer–in–Charge of Construction; and RADM Spencer R. Smith, Officer–in–Charge of Construction for the Naval Facilities Engineering Command.

62. Newport Dedication Ceremony. A ribbon–cutting ceremony marked the opening of the Newport deep–draft port facility at Saigon, BGEN S. E. Lollis officiated as RADMs A. C. Husband and P. E. Seufer, right, looked on. At Lollis' left are (L–R) MGENs R. R. Ploger and C. H. Dunn, and BGEN D. A. Raymond.

63. MACV Headquarters—Tan Son Nhut. The headquarters facility for the Military Assistance Command, Vietnam (center-right) is adjacent to the Tan Son Nhut Airbase complex, just north of Saigon. The MACV installation includes a headquarters building, a barracks and mess hall, the Headquarters Commandant's office and warehouse building, a power plant, a chiller plant, and a telephone exchange building. It has its own fresh water system with the wells and treatment plant located on site. Paved roads and 4 acres of paved parking lots were also provided. This headquarters complex is one of the largest and most complete of any outside the United States.

64. U.S. Army Headquarters—Long Binh. The 6 buildings which form an "H" (lower sector) are the headquarters complex of the United States Army, Vietnam (USARV); the four building complex in the upper sector of the photo are the headquarters of the U.S. Army's 1st Logistical Command.

CHAPTER SIXTEEN

Building Years of Development in Weeks

At Cam Ranh Bay, one of the great triumvirate of bases involved in the massive building activity, the general requirements were the same as at Da Nang and Saigon: deep water port, Army and Air Force barracks, and extensive airbase building.

Yet there was a considerable difference between building in Saigon and Da Nang as compared to Cam Ranh. Before the Americans arrived to build the first relatively small (400 foot) deep water pier in 1963 and '64, Cam Ranh was largely a vast sandy seaside waste with Sahara-like dunes which had to be moved before any sizeable installations could be successfully constructed.

Both the Army and the Air Force saw the great value in having major operational and depot facilities at Cam Ranh. And Cam Ranh also became one of the bases for the Navy's MARKET TIME coastal patrol operations. There was also a large Navy communication station, and a Naval air station at the Cam Ranh airfield site.

In January 1966 the Army won support from MACV–DC, and the Army Ammunition and Logistic Support Facility took precedence over the airfield construction work. The earth-moving equipment was moved from the airfield to the Army depot.

The Army depot included a wide span of warehouses; the first task was to prepare the site and pour concrete for thirty 40-foot by 220-foot concrete slabs for warehouses and six more to be 140-by 220-foot. Also to be built with top priority was an ammunition depot with 102 ammunition hardstands and ten miles of roads. This was all to be done by June 1st, 1966. 2.5 million cubic yards of earth would have to be moved, and 35,000 cubic yards of concrete put in place. The RMK–BRJ work crews would have met the

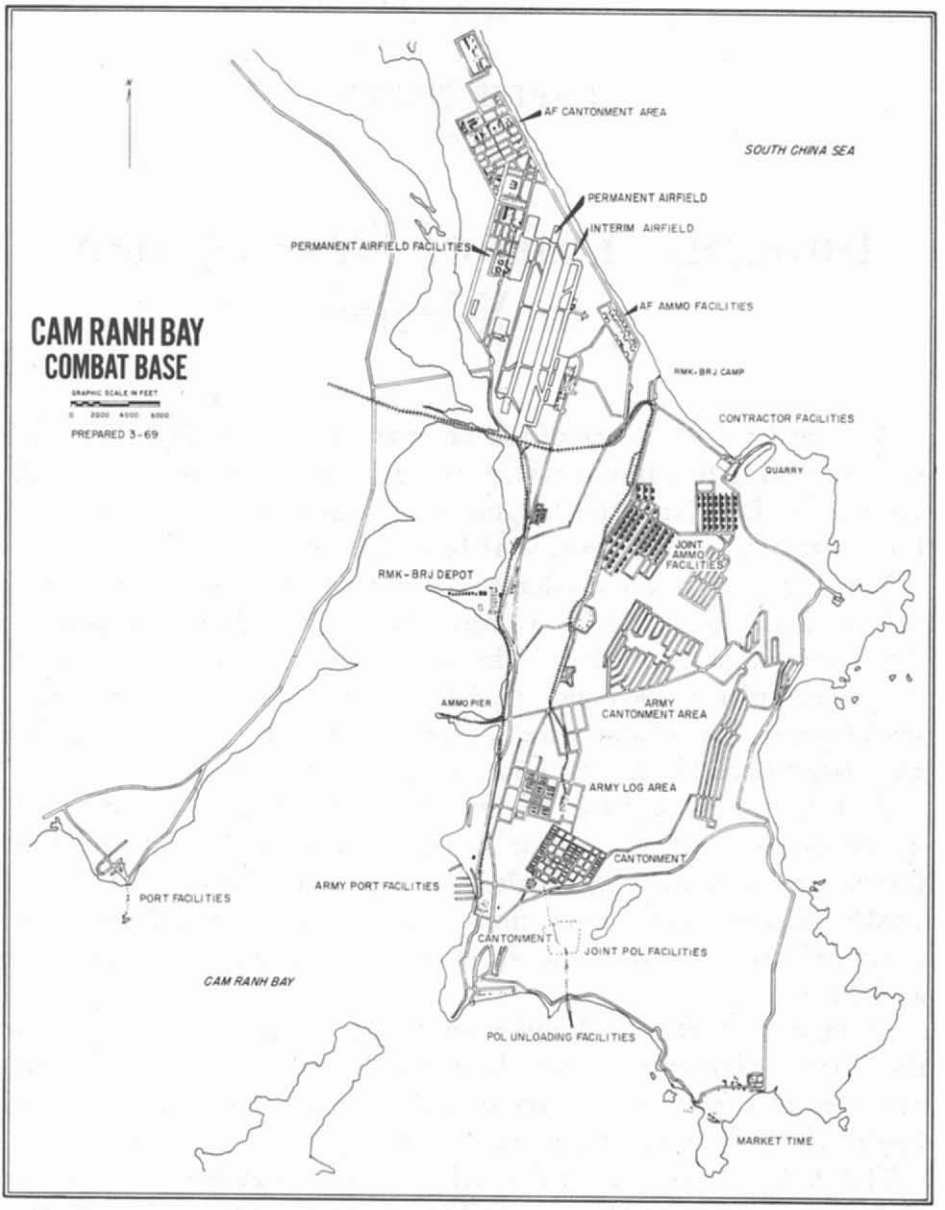


FIGURE 19

scheduled occupancy date, except that the work was expanded to include 20 more ammunition hardstands.

As the Army ammunition depot and first stage of the warehouse

project were completed in June and moved into the second stage, much of the equipment which had been pre-empted from the airfield project went back to the original assignment.

The airfield project was the largest job undertaken at Cam Ranh, as we have indicated earlier. It was not as large as the airfield at Da Nang or Saigon (Tan Son Nhut-Bien Hoa), but it included aircraft parking areas, storehouses, barracks complexes and a new 10,000 foot Portland cement runway and taxiway. It was to be formidable in size, especially considering that the "interim" airfield, taxiways and parking facilities of aluminum planking were to be maintained side by side with the new concrete facilities. Three dredges, the BESS, HELBAR and HYUN DAI HO pumped sand to build up the south end of the airfield, with a total of 1.5 million cubic yards.

The record of the HYUN DAI HO, both here and in the dredging for the ammunition pier at Cam Ranh, was outstanding. This 25-inch suction dredge dug 2.9 million cubic yards of sand in dredging for the ammunition pier causeway.

The buildup of the deep water port facilities at Cam Ranh was progressing in the Summer and Fall months of 1966. Besides the construction of the conventional sheet-pile pier by Army engineers at the Army port facility next to the 400-foot pier built in '63–'64 by RMK, Army engineers also put in one of those quickly-installed DeLong piers at the end of the ammunition causeway. Already, it had been decided that the huge Cam Ranh peninsula would be fit for South Vietnam's largest ammunition depots.

As the year 1966 ended, the progress of the huge building program in Cam Ranh was in mid-flight.

Besides the massive building programs in these three centers, lesser projects ranged the length and breadth of South Vietnam. They yielded cantonment areas for the troops, new airbases, and Naval installations to support the MARKET TIME and GAME WARDEN Naval patrol activities, as well as mine sweepers and the Mobile Riverine Force. In all of these bases which speckled the map of South Vietnam, there was a steady expansion in '66. At the end of '66 they were well on their way towards the vast development which would become spectacularly visible in '67, like effulgent flowers from the energetic groundwork of 1966.

The northernmost building site for RMK–BRJ, only six miles

south of the Demilitarized Zone and the Ben Hai River, was a place known as Cua Viet. It was scheduled to be the port for northernmost I Corps. Here, the Cua Viet River reaches a beach close to the shore of the South China Sea. The geographical structure is a common one where there is heavy surf on an ocean beach and a shallow coastal shelf. A swampy area forms behind the beach and deepens into a lagoon, so that there is an off-shore bar, a sandy island running the length of the coast, with a long lagoon inshore. This is the structure common on the Atlantic coast of the United States, and particularly famous in Miami Beach, where this skyscraper beach resort is built on the bay mouth bar.

The project at Cua Viet was to dredge a channel through the bay mouth bar so that there would be a clear passage to the South China Sea—so that LSTs could come through it and land their cargo in the relatively sheltered waters of the Cua Viet river-mouth. The method in the plan was to supply the American Marine positions just south of the DMZ, such dug-in, heavily sand-bagged and barbed-wired fortress positions as Gio Linh, only three miles south of the Ben Hai River boundary with North Vietnam.

This area just south of the DMZ had come into military prominence in July of 1966 when a large scale engagement was fought in Quang Tri province, which abuts against the DMZ and was an active infiltration zone for NVA troops coming down from the Zone. That engagement was known by the code words OPERATION HASTINGS.

U. S. Marines, Vietnamese Marines and South Vietnam's only airborne division combined their forces here to attack the North Vietnamese 423–B. Division. It was a sanguinary battle, the second-largest battle of the year in terms of numbers of enemy killed. The NVA Division lost 882 killed in the engagement. (The largest battle of that year, by the way, was OPERATION ATTLEBORO, much farther south in Tay Ninh province, near the capital city of Tay Ninh, 50 miles northwest of Saigon on the Cambodian border. Here, the enemy lost more than 1,100 killed and over 22,000 U.S. troops were involved in an engagement against the Viet Cong 9th Division. The American outfits were the First Infantry Division, contingents from the Fourth and 25th Infantry Divisions, and the 173rd Airborne Brigade.) Later, in 1972, in the NVA's Easter Offensive, both the Tay Ninh area (An Loc) and Quang Tri Province

in the north (Cua Viet, Dong Ha, Quang Tri) were involved in even more massive NVA efforts.

The construction job was to dredge a 3,500 foot channel through the sandbar 200 feet wide and 18 feet deep so that LSTs could sail through it to the mouth of the Cua Viet River.

The survey crew left Da Nang by a Navy LCU (Landing Craft Utility), November 13th. It was a stormy season; the northeast monsoon had set in with heavy rains and seas. The survey crew decided that the surf at the river mouth was so bad that the only workable dredge would be the hopper type. This kind of dredge uses an endless chain with buckets or hoppers to move out the earth it is excavating.

What the survey crew found was a bay mouth bar submerged six to seven feet, with heavy seas racing across it. And the open expanse of ocean waves rushing across the bar generated violent currents.

A quick check revealed that the only available hopper dredge was the SWELLMASTER, then working at Cam Ranh Bay. And that dredge would require calm conditions and a depth of 12 feet to make her way across the bar. It was decided that the SWELLMASTER would have to be equipped with a drag line or clamshell so that she could dredge her way across the bar.

She came to Cua Viet on November 18th, 1966. Two tugs, the SOUN MARU and the CABRILLA, arrived the next day. They had a clamshell barge in tow.

But the seas were so rough that the SWELLMASTER had to leave Cua Viet on the 21st, for Da Nang.

The CABRILLA went back to Da Nang and picked up another clamshell barge and left on the 26th of November. But the weather was too heavy and stormy and she had to turn back.

On November 29th the SWELLMASTER again left Da Nang, but was unable to make her way against mountainous seas and the high winds of the northeast monsoon. She went back to Da Nang.

At Cua Viet, the first two clamshell barges were in position to begin digging on the 10th of December. But the seas were wild, and one barge lost an anchor, the other, both anchors and a winch in the thundering breakers.

The crew decided that the surf was too violent for the RMK–BRJ clamshell barges, and they went back to Da Nang on December 22nd. They had worked only two days, one working one day and

the other, two days. And their excavations made during the day were filled by the sea during the night.

It was decided that the best dredging equipment after all would be a suction dredge, at least for the first excavation. Around the mouth of the Cua Viet River the water was relatively calm. The dredge chosen was the 20-incher HELBAR, which had been working at Cam Ranh. Arrangements were made to use a Navy LSD, Landing Ship Dock, to transport the relatively fragile dredge. Two barges, MMT2 and MMT4, were to be employed to transport the pipeline for the HELBAR.

Many misadventures befell the two barges and the tug which was pulling them. For example: the tug lost barge MMT2 in the heavy seas, took MMT4 back to Cam Ranh, retrieved MMT2 near Vung Tau, and was damaged in the sea.

The RMK–BRJ experts decided the only solution for working in those rough waters was to employ a rugged, seaworthy DeLong barge, with a large drag line to be mounted on her deck.

Thus, as of the turn of the year 1966 into 1967, this project at Cua Viet in the far northern reach of South Vietnam had been batting zero—almost totally because of the extremely stormy northeast monsoon.

As work on the project continued, despite natural obstacles which to lesser men would have been insuperable, other difficulties were imposed by the Viet Cong and their allies, the North Vietnamese Army.

It should be added that the RMK–BRJ chiefs of the Cua Viet project had objected from the beginning that the heavy northeast monsoon storms would make the work at Cua Viet extremely difficult—difficult even in transporting equipment from Da Nang north. But the military strategists on the staff of MACV insisted that the work should be started immediately because of the pressing tactical situation in the DMZ, where North Vietnamese forces continued to penetrate.

* * * * *

It was to be six months before the Cua Viet dredging operation was finished.

Before we continue with the story of the building wonders worked at Chu Lai and elsewhere, we must tell how one of the main hobgoblins of all the building sites was fairly well laid to rest. That hobgoblin was a simple problem—the amount of thievery around the ports and storage areas.

And the remedy was a simple one too—covered storage and fences. And systematized arrangements for security.

However, the solution was expensive and difficult, because the amounts of materials and equipment were so vast. Also, because the top priorities were naturally for the shooting war against a flexible, resistant and persistent enemy.

The need for covered, guarded, secure storage in Vietnam had become acute in early 1966. With the advancement in monthly WIP (Work In Place) from $28 million in May to $44 million in October, 1966, and surging well beyond that to $64 million in March, 1967, the RMK–BRJ stock of equipment and supplies on hand grew staggeringly large.

Besides the 5,000 pieces of equipment in RMK–BRJ inventory, there were nearly 1,000 pieces of rented equipment like barges, tugs, dredges and pile drivers. The bulk material on hand had surged from $44 million in December of 1965 to $162 million in May of '66. Soon it would move to $185 million.

Contractor depot facilities grew to a total of 97 warehouses located at 20 sites. This provided a total floor space of 800,000 square feet. This was one-half the area of Chicago's famed Merchandise Mart, then the second-largest building in the world—or one-quarter of the floor space of the then-world's-largest building, the Pentagon. The three largest storage areas (and repair depots) were created at Saigon (Thu Duc Island, and the nearby SUMPCO quarry), at Da Nang and at Cam Ranh.

The Da Nang depot was mostly finished by September of 1966. By that date, the 60 acres in the depot were chock-a-block with supplies and equipment.

The finished depot at Cam Ranh had eight general warehouses, three cement warehouses, a spare parts warehouse and an oxygen and acetylene plant. The open storage areas were 560,000 square feet in extent, with 25,000 feet of roadways between the stock piles.

We have already reviewed the largest of all the depots at Thu Duc Island outside of Saigon.

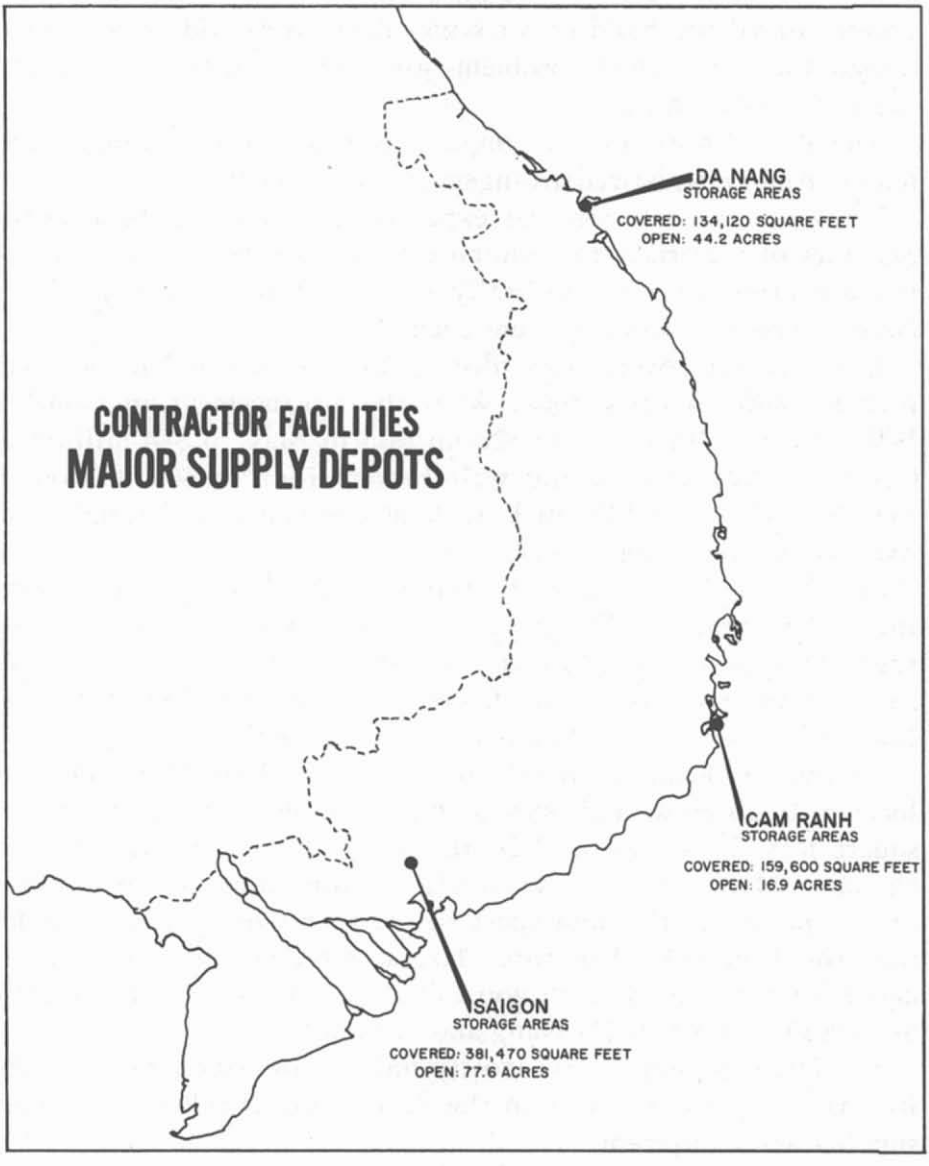


FIGURE 20

This growth in inventories obviously required greater emphasis on material management and led to a large growth in the OICC

RVN organization. A Material Department was established in July of 1966, staffed by four officers and 37 U.S. Civil Service people, to monitor the contractor's procurement, shipping, inventory, property and equipment programs. In June of 1967, the OICC Material organization was mostly decentralized by assigning seven people to each of the three contractor material depots.

To provide security forces in the new depot areas, the first move had been made by the RMK–BRJ chief, Bert Perkins, with 32 Korean Judo-Kendo guards.

By the Fall of 1966, strenuous efforts had been made to provide 24-hour patrols of the depots. At Cam Ranh, the foot patrols, Vietnamese civilian workers, were unarmed, but there were armed motorized patrols from the contractor's security forces. And the Coast Guard patrolled Cam Ranh Bay.

In Da Nang, a 30-man force of armed Chinese Nung (mercenary) guarded the depot. And in Saigon, the Tan Son Nhut RMK–BRJ warehouse and storage area were patrolled by off-duty U.S. servicemen. The waters around Thu Duc were patrolled by two contractor-operated LCMs.

These measures did not stop all pilferage, but they certainly helped. To the end of their Vietnam work, RMK–BRJ constantly had to be vigilant in a nation where poverty and civil war contributed heavily to the temptations inherent in any nation so stricken.

One very important link in the booming RMK–BRJ building effort was the much-embattled struggle to construct living camps in Vietnam for contract workers. Early efforts to establish good camps for their workers generally failed in the face of the need for the higher priority for the building work itself. In other words, the military wouldn't give the contractor good enough priorities so that he could build proper camps for the workers. One result was a much-too-rapid turnover of U.S. and TCN contractor employees.

But eventually the OICC managed to persuade MACV–DC that, in the interests of efficiency, a higher level of sustenance would have to be provided.

The logic was that if you don't have at least minimal housing you can't keep the right kind of supervisory people to accomplish

a good job. One of the guiding management principles of Morrison-Knudsen had always been President Jack Bonny's maxim for employee relations: "Feed 'em well and work 'em hard."

In early 1966, RMK–BRJ managed to bring in a group of professionally-qualified camp managers, cooks, bakers, commissary storekeepers, and camp labor foremen. The camp managers had sufficient budget to hire workers whom they could train as waiters, wiatresses, houseboys and housegirls—to reach a reasonable equivalent of the level of elemental comfort.

Despite many delays occasioned by low priorities and such extra hazards as the rainy monsoon weather and pilferage, messhall and housing equipment and supplies reached the contractor camps in the late months of 1966.

Commercial laundry equipment came in a little later, and laundry specialists were brought in from Korea to operate the equipment and instruct Vietnamese in running the equipment.

In the same time frame, sales stores were set up at the main sites, since the military PXs were not only inaccessible, usually, but they were generally over-taxed by their own personnel.

* * * * *

It had been determined in 1965 that RMK–BRJ would build a 10,000 foot concrete runway and taxiway at Chu Lai, plus a wharf for LSTs. But the advent of the northeast rainy monsoon in the winter months of 1965 and 1966 somewhat impeded the work on both the airfield and the port. Also delayed were the necessary roads and an ammunition supply point, plus the usual auxiliary buildings.

The runway, an apron, 1,800 feet of the parallel taxiway, and a warm-up pad were officially dedicated on October 6th, 1966.

At the end of the year the work on many of the important projects and the expansion of Chu Lai was very much *in medias res*.

A sizeable POL system, including underground tanks of 50,000 barrel capacity, with 8-inch and 10-inch underwater fuel lines, was impeded by the heavy seas of the winter monsoon in November.

Other installations under construction at the turn of the year,

1966–67, included a hangar, 120 feet by 150 feet for MAG 36, the Marine Aircraft Group. Three large hangars were also under construction for MAG 13, a group flying McDonnell F4C Phantoms, then the Armed Forces' hottest fighter.

Also in-work was a large power plant, for seven 1,000 kw diesel generators, with fuel storage facilities, a series of new roads, and storage warehouses (for MAG 13).

The Chu Lai base, besides being an important center for Marine and Army operations in this area, was becoming an important supply base for the area between Da Nang and Qui Nhon. Here the Viet Cong and their NVA allies nutured a hotbed of resistance, centering in Quang Ngai province.

Inland of Quang Ngai and its capital city of the same name, the Ho Chi Minh Trail tracked in from southern Laos. It was the main supply route for men, materials and arms coming down from North Vietnam. In the NVA offensive of Easter, 1972, a North Vietnam force tried to push in this direction through Kontum and Pleiku.

Several important battles had already been fought in this area. We have noted the modern "Cannae" encirclement movement carried out by the Marines in the area in OPERATION STARLIGHT, in August of 1965. And slightly to the south, in the plateau country west and south of Chu Lai, the First Cavalry Division had engaged three North Vietnamese Army regiments, in the Ia Drang Valley, on the Cambodian border, in late October, 1965. They and ARVN troops had killed an estimated 1,800 North Vietnamese.

In this latitude, the nearest inland base then being built up by RMK–BRJ was Pleiku.

The heavy concentration of both Air Force and Army troops in the Pleiku area made it necessary to add considerably to the living quarters.

Air Force facilities constructed were 56,000 square feet of troop housing, a 20,000 square foot dining hall, a complete new power and utilities system, and a 30,000 square yard asphalt parking apron.

Another spread of troop housing at Pleiku was started in November of 1966, with seven two-story barracks, with another five barracks directed to be built in January 1967. Also in-work at the year's end was a 400-bed hospital.

Due east of Pleiku and on the coast was a high-priority Air

Force base, Phu Cat, 160 miles south of Da Nang. It was also 20 miles north of Qui Nhon.

Phu Cat is in Binh Dinh province, a Viet Cong stronghold, and the area occupied by the airbase was a training center for Viet Cong. It is said that Binh Dinh was the birthplace of the Viet Cong insurgency movement in Vietnam.

The Communist stronghold in Binh Dinh province is in the Phu Cat mountains inland of the coastal plain, which is a rich rice-producing area. Those mountains had never been entered by government forces when Phu Cat was chosen as the site of the airbase. The Air Force had been looking for a site for this base, which they called Base X, for several months. When an Air Force officer, LT COL William Borgner, first came to the site in a helicopter in March of '66, he trod on a phosphorus mine and died in the explosion. With COL Borgner at the time was RADM Wooding, but Wooding was not injured.

At Phu Cat, work started in May of 1966. The RMK–BRJ advance detachment and a Korean subcontractor who was to build the contractor camp moved in on May 13th.

Security for the workers continued to be a touchy— and dangerous—problem. A Korean garrison force, the Tiger Division, had come in to the Phu Cat Valley to clear the area of enemy. One Korean soldier was killed and three others badly injured in a mine explosion. The RMK–BRJ excavation superintendent was blown up in his pickup truck by a mine, but he was only slightly injured.

The Phu Cat runway was the standard size for major airbases in Vietnam: 10,000 feet long, 150 feet wide, at least ten inches thick, with two 1,000 foot over-runs, all but the overruns being made of Portland cement concrete.

By mid-July land use and grave relocation problems were cleared. Once the crews were free to work, several production records were hung up by the Phu Cat construction crews. In one 19-hour day, 54,000 cubic yards was placed—enough to fill the largest storage building at MACV headquarters, or a pond 500 feet square and two feet deep. When the earth-moving equipment got into full operation, in one six-day week, 250,000 cubic yards were moved into place and compacted. Later, when the concrete was being laid, the first increment of the runway and taxiway, respectively 6,000 feet of runway and 5,000 feet of taxiway, were completed in 23 pouring days, averaging 1,800 cubic yards per day.

In all, Phu Cat has a distinguished history in the chronicles of the distinguished building consortium, RMK–BRJ.

Qui Nhon, on the same geographical belt as Pleiku and joined to it by the east-west highway, Route 19, was scheduled for large development beginning January 1966. It was a natural port location for supplying the highland terrain of Pleiku and Kontum provinces on the Laotian border. There were 25 projects in and around Qui Nhon totaling almost $40 million.

Qui Nhon had originally been a helicopter and light plane base, and the site of a large Vietnamese government hospital. Our building efforts also included a POL storage and pump facility.

But in the 1966–67 time bracket, three major improvements, converting this into one of the major base cities of South Vietnam, were managed: The airfield was converted into a standard 10,000 foot structure with parallel taxiway. And the port facilities were converted to deep-draft capability, although the port capability was not as large as in the three great base cities of South Vietnam, Saigon, Cam Ranh and Da Nang.

Two dredges, the privately-owned ANN and the U.S.S. DAVISON, owned and manned by the U.S. Corps of Engineers, worked to dredge a turning basin and channel to the new port facilities. The ANN and the DAVISON together dredged more than two million cubic yards to form the port, and to build an approach road to the Army pier area. Other port facilities built up in 1966 included a 450 foot sheet pile bulkhead and pontoon pier for commercial fishermen and other maritime traffic. It was sponsored by USAID for Vietnamese civilian use.

Besides the port and airport facilities, a naval base for the American MARKET TIME patrol operations was built in 1966–67.

Qui Nhon was only one of the 40 project sites then in midflight as the Vietnam contractor effort climbed towards its peak. The Work-In-Place level had reached $41.4 million for the month of September. That, of course, was well beyond the ultimate goal of $40 million per month sought in planning that year's output. But in March of 1967, with all of the 40 sites soaring to their peak, the record WIP (Work-In-Place) increased to more than 50 percent beyond the $40 million objective—$64 million.

At that time, the value of the building equipment in hand had reached its peak of $115 million, or 5,560 pieces, and the material inventory was at its top level of $185 million. And by this time, the

bulk of the much needed warehouse depots, maintenance shops, transportation and computer systems, port operations and airbase facilities were well on their way to completion.

By February 1967, the OICC staff had reached a total of 1,050, including 90 officers of the Navy Civil Engineer Corps. And the number of sites throughout South Vietnam had risen to 47, with 782 separate projects.

But to finish the geographical rundown of the major projects in progress from north to south:

Nha Trang, the old French resort town, the "Riviera of the Far East", was about midway between Da Nang and Saigon. Our early building efforts in Nha Trang had been to construct facilities for the South Vietnamese Naval Academy, airfield improvements and schools for South Vietnamese rangers and paratroops.

Now, in 1966, a large building program, nearly $35 million, was undertaken for a large influx of U.S. Air Force and Army aviation units.

The biggest project of all at Nha Trang was to rebuild the airfield and erect buildings for a Vietnamese Air Force Academy.

Other projects at Nha Trang included a 150,000 square yard hardstand for U.S. Army aviation.

In addition, a $2.3 million complex for the First Logistical Command was in progress. Housing for 2,400 troops, and the large warehouse and maintenance facilities, which would total 75,000 square feet, were still in the building process.

Concurrently, the Eighth Field Hospital, one of the first military hospitals to be built in Vietnam, was being expanded and improved with new facilities.

Next to the south was an airbase which the U.S. Air Force had been very anxious to build: Phan Rang.

Phan Rang was a small fishing village 160 miles northeast of Saigon, and 50 miles south of Nha Trang. Phan Rang has one distinction, a climatic one. It is in the area where the winter rainy monsoon, which occurs approximately from October until March, gives way to the summer monsoon of the southern part of South Vietnam where the heavy rains and storms come from June to the Fall. Therefore, Phan Rang has the distinction, not enviable from the builder's point of view, of having two rainy seasons, one from late March through May, the other from September to December.

Fortunately, the rains are not especially heavy in either season. The average rainfall is only 35 inches.

The Air Force had for a long time sought to have a base built at Phan Rang. In July of 1965, a U.S. Army engineer battalion had built a 3,000 foot pierced steel planking runway, very much an interim facility.

In late 1965, the Army engineers were tasked with the job of doing a 10,000 foot aluminum-planking "interim" airfield, complete with aluminum taxiways and 90,000 square yards of parking apron.

As the high-powered new "McNamara" construction program got under way in early 1966, RMK–BRJ was assigned the job of building a concrete runway, the usual 10,000 feet long, plus taxiways and 130,000 square yards of apron. The Army 62nd Engineer Construction Battalion had the responsibility for the "interim" airfield. The RMK–BRJ combine was ordered by OICC to assist them in every way possible with the first airfield.

By October, the monthly Work-In-Place had soared to $4.8 million. That month, there were more than 1,500 Vietnamese workers and 300 Americans, about 800 Third Country Nationals. Laborers were local fishermen and farmers, converted in a huge on-the-job training program.

To begin with, the RMK–BRJ equipment was diverted from their main task to aiding the Army engineers. This work went on from December of 1965 into early 1966. The interim field was finished on March 14th.

Then, the contractor forces were able to make a maximum effort to build the concrete runway and taxiways, and to finish work on an ammunition supply depot. Both projects were well underway as 1966 ended, and the runway, aprons and taxiway were ready for operations by January 19th, 1967.

The history of the Phan Rang airbase was typical of the contractor building activities at this period of max-effort. First, the "interim" runway and taxiways and parking areas, achieved by whatever improvised combination of military and contractor labor could be managed. Then, the influx of greater numbers of contractor workers and newer and more capable equipment. At last came the rapid emergence of an airbase, with its barracks, administrative and service facilities.

We have written at length about the massive building activity then going on in Saigon. Next, as we make our progress to the south, we come to Nha Be, and the complex of patrol and amphibious small-boat operations on the rivers called by the code name GAME WARDEN.

Nha Be was a village on the Saigon River ten miles southeast of the capital city. Just to the south of it lay an area called the Rung Sat, which translates into Jungle of Assassins. It was not literally a jungle. It was a wide, swampy plain of reeds and mangrove trees, with a few prominent knobs of hills projecting. It was sparsely inhabited, and the small amount of agriculture which was carried on there was mostly pineapple cultivation.

The principal claim to fame for the area was that Viet Cong used this wild locale as a marshalling place for supplies, arms and men smuggled in by the Ho Chi Minh Trail via the backwoods of Laos and Cambodia. The Rung Sat was a junction place for men and supplies moving southward into the populous Delta area of Vietnam.

At this time in America's military effort in South Vietnam, little military force had been sent into the Delta. The military command felt that the greatest danger was from Saigon north to the DMZ and the Laotian and Cambodian borders, where the North Vietnamese had their lines of reinforcements and supply.

But the High Command also believed that a great secondary threat lay in the Delta, in the south, where 80 percent of South Vietnam's population lives, and it is the principal source of its national income as a rice-surplus nation.

The first American troop detachment of any size sent to the Delta was a battalion of the U.S. 25th Infantry Division, which was scheduled to arrive in Long An Province, just south of Saigon, in September.

The plans for Nha Be reflect some of the peripheral preparations for the introduction of this body of troops into the Rung Sat and the Delta. The river patrol force was an important adjunct. The rivers and canals had to be swept of the Viet Cong "Navy"—the innocent-appearing sampans which peopled the network of rice commerce in the Delta.

The GAME WARDEN forces would employ fiberglass boats. They had water-jet propulsion and were armed with .50 calibre machineguns. This fleet had extremely shallow draft and high

speed. It was well fitted to patrol the complicated and extensive network of rivers and canals which made the Delta of South Vietnam a green gridiron of rice terraces and Viet Cong ambushes. The Vietnamese Navy would assist the GAME WARDEN boats in their forays. And before the end of the year, the GAME WARDEN forces would be supported by armed helicopters, and air-cushion vehicles (built by Bell Aircraft on a patent leasing arrangement with a British firm) would be augmenting the original skimmer-Navy of Operation GAME WARDEN.

The Navy Seal super-commandos were specifically assigned to the patrolling of the Rung Sat. The name Seal is an acronym, standing for Sea-Air-Land. The Seals had exhaustive training as frogmen, paratroopers and Rangers. Most of their work was intelligence patrols and raids deep in VC territory.

The first contractor work at Nha Be was done by two dredges, the 16-inch HUONG GIANG and the 12-inch DONG NAI—the dredging of 300,000 cubic yards of sand.

The cantonment work in the area included barracks for 400 men, storage for 3,000 barrels of Petrol, Oil and Lubricants (POL), a storage warehouse providing 8,000 square feet, a communications and administration building, ammunition storage, two antenna towers, a messhall, a pier, and the required road, water, sewerage and power facilities.

Southeast from Nha Be was the seashore resort of Vung Tau, formerly called Cap St. Jacques by the French. Vung Tau literally meant "Roadstead for Ships". We have seen the contractor building it as a communications center, small airfield and Army cantonment area. Now it was to be expanded and made into a deep water port.

A large construction force was busy during 1966 with construction projects at Vung Tau. The work force in mid-June numbered 96 Americans, 98 Third Country Nationals and more than 1,900 Vietnamese.

Most of the work was concerned with port and naval activities. The Vung Tau area like Nha Be, was going to be a center for GAME WARDEN. The base was located at Cat Lo, a few miles north of Vung Tau, and it was to be a hub of coastal and riverine patrol activities for both the U.S. and Vietnamese navies.

The port project at Vung Tau was to dredge a turning basin for deep water ships, with channel 12,700 feet long.

The dredge BESS arrived to start dredging the basin on November

27th, 1966 and that work continued until January 9th, 1967, by which time 610,000 cubic yards of material had been excavated.

Next to the south was My Tho, one of the principal sites in the expansion of the war against the Viet Cong and NVA forces in the Delta.

My Tho, 40 miles south of Saigon, was deep in the Delta. This meant that it would be dominated by typical Delta geography: swampy rice lowlands and a riverine culture dependent on transportation by riverboat and sampan.

Accordingly, the first order of business as in the average Delta construction project was going to be a surfeit of dredging, so that there would be something like dry land on which to erect the buildings.

One of the major jobs was at Dong Tam near My Tho and involved reclaiming 600 acres of land. Later, Dong Tam was to be known as the Graveyard of Dredges.

A barge-mounted clamshell dredge (so-called from the shape of the digging scoops) came to Dong Tam on July 7th to begin work preparing the work-site for two larger craft, the JAMAICA BAY and the CHO GAO.

The 20-inch (dredge pipe diameter) dredge CHO GAO arrived at the end of July, but could not start pumping until August 4th because of a mine scare. The dredge was mined once, but the explosive was found and removed in time. The dredge was also shelled in a mortar barrage, but only minor delays occurred. Nevertheless, the skipper of the barge understandably wanted some security provided before he started operations.

The Viet Cong and their NVA sponsors quite naturally devoted a continuing military effort towards impeding the American construction efforts at Dong Tam and My Tho. That base would have a commanding position at the head of the Delta and the top of the Mekong mouths. The enemy knew well that a formidable military base here could cripple his efforts in the whole Delta.

The largest dredge in-country, the 30-inch JAMAICA BAY, arrived in September and began pumping operations September 22nd. The crews working among the fillpipes on the shore were often subjected to small arms fire by snipers. And a large blast on one of the drag lines was found to have been caused by a plastic charge mounted on a turntable. It caused heavy damage.

But work on the fill project went well until 5:15 a.m. on January

9th, 1967, when two plastic charges were detonated under the JAMAICA BAY and she sank. Three men died in that explosion, one was seriously injured, and there were many minor injuries. The JAMAICA BAY had excavated 2.3 million cubic yards before her sinking.

These were only the first of a series of violent attacks levelled at the dredges as they came in succession to do the much needed job of excavation and fill at Dong Tam. Three more drag lines and a big dredge were to be blown up here at the turning basin of My Tho, where the land for the Dong Tam base was being pumped.

While the dredging at Dong Tam was impeded by this determined enemy action, the construction work on barracks buildings and other camp facilities in My Tho went more rapidly. There were two projects, one for a camp of 31 buildings for the U.S. Army; the other for ARVN troops, with 27 more buildings. In addition to the contractor effort, the Seabees built several buildings for the Naval Support Activity, Saigon.

Despite the fact that this project was closer to the town, and therefore less exposed to possible enemy action than the dredging site at Dong Tam, the construction crews here at the barracks sites were also subjected to harrassment by the Viet Cong. On September 9th, a D4 tractor was blown up, and the Filipino operator injured when it detonated a VC mine. A delay of a week occurred as RMK–BRJ workers waited for ARVN engineers to sweep for other possible mine positions.

A pier for the Riverine operations began in October of 1966. The work was halted at the time of the sinking of the dredge JAMAICA BAY. The explosion badly damaged a part of the pontoon pier and it had to be replaced.

The pier was constructed by Seabees brought in from I Corps. It consisted of six concrete pontoons, and became the base for a berthing-messing barge, a floating barracks, or personnel berthing craft (APL) and a floating derrick.

Excavation at the site of the turning basin and the land-fill job at Dong Tam had to wait for the arrival of another large suction dredge to replace the JAMAICA BAY, the NEW JERSEY. She was also mined and sunk. But not until nearly two years later. First, she had dredged 1.5 million cubic yards of river bottom.

After months of reconditioning and repair work, she was back in Vietnam, and started again with her indispensable work of

dredging this low-lying country for the builders. I caught up with her in September of 1970, and found her at work on the Cambodian border, where the Mekong crosses in the vicinity of the so-called "Parrot's Beak". There American forces had made their 1970 raid in force with ARVN troops, against the Cambodian sanctuary bases. There the NVA had built vast caches of arms, munitions and food which they expected to use in the Delta campaign of 1970–71. In this uneasy border area, the NEW JERSEY was dredging river bottom to provide fill for camps then being built by the Seabees in the "Vietnamization" program.

On board I found one crewman who had been aboard the NEW JERSEY when she was sunk at Dong Tam. He was an electrician, Gaston G. Demers.

The Captain, Ray E. Covington of Tampa, Florida, who was captain at the time of the Dong Tam explosion, was also on board. He had not been aboard at the time of the explosion of the mine, but remembered it well. The routine of Viet Cong mining was the same as for the JAMAICA BAY.

"They (the Viet Cong) floated explosive against the stern. A big charge. They blew the stern compartment out of the dredge."

* * * * *

And now to finish our roundup on the contractors' building projects in Vietnam in 1966 and early 1967.

At the same latitude as My Tho, but on the other, or west side of South Vietnam, RMK–BRJ crews moved onto the strategic island of An Thoi, in January of 1966. An Thoi is a tiny island off the coast of a larger one, called Phu Quoc, in the Gulf of Thailand and 15 miles from the Cambodian coast. The job to be done by RMK–BRJ was to build an airfield with a 4,000 foot asphalt runway, a 40,000 square yards Pierced Steel Planking apron, a sea wall, barracks, two warehouses, a pier, and utilities such as powerhouse, water and sewage systems.

The next belt of bases being built by RMK–BRJ in the Delta was 25 to 50 miles farther south. One was Vinh Long, 30 miles south-

west of My Tho, on the middle mouths of the Mekong. This was the site of an airfield for helicopters and a sizeable cantonment area.

The building operations began in June, 1965, well in advance of the McNamara visit which had sparked our greatest building boom in November. The work continued into 1966, and was finished the end of the year. One of the delays was caused by the late arrival of a dredge to pump a sand fill for the cantonment area.

The biggest RMK–BRJ building efforts in the southernmost latitude of their jobs in the Delta were clustered around Can Tho. Largest city of the Delta, and fourth-largest in South Vietnam, Can Tho had more than 100,000 people.

The main jobs of RMK–BRJ in the Can Tho vicinity were to build a base for riverine operations. It would have barracks and officers' quarters, service buildings, boat shops, storage building and clubs, roads and the usual utilities, an ammunition bunker and a pontoon pier. This Navy facility was between downtown Can Tho and the village of Binh Thuy, adjacent to the west.

Also included in the contractor's job was a modernization of the Binh Thuy airbase. This would include an extensive AC&W (Aircraft Control and Warning Station).

Thus, the broad panoply of bases was being built at a high rate by RMK–BRJ across the length and breadth of South Vietnam, a tremendous, mounting effort.

But the forces of military engineers, the Seabees, and others were also expanding their efforts and their forces as 1966 wore into 1967.

More NMCBs were being freed from involvement elsewhere, in 1966, and trained for future involvement in Southeast Asia.

Seabee Teams, those precious small parts of the battalions, were working in all sections of South Vietnam, including the Delta. Also, they were deployed in Thailand's backwoods areas. And the Seabee Teams had proved so successful in Civic Action projects that the U.S. AID (Agency for International Development) authorities decided to request a doubling of the number of Seabee Teams serving on USAID projects, from four to eight. The plan was developed in the Fall months of 1966 and the request was made for the extra teams in January of 1967.

Meanwhile, L. Wade Lathram, a great champion of the Seabee Teams for their excellence in Pacification, was elevated in November

to the position of Director of the newly created Office of Civil Operations, or OCO. This new agency was created to unify the fragmented pacification effort in South Vietnam.

We will review these Seabee operations in the following chapter.

CHAPTER SEVENTEEN

Seabees on the Flood

The first commander of the Third Naval Construction Brigade in Vietnam was RADM Robert R. Wooding. Thus Wooding wore two "hats", that of overall boss of contractors working for the Navy in SE Asia and now Commander of the Seabees there as well.

He was the first Admiral to command the Seabees in Vietnam on the scene. The title of his contractor job had a record for sheer length DEPCOMPACDIVNAVFACENGCOMSEA, or Deputy Commander Pacific Division Naval Facilities Engineering Command Southeast Asia. To carry that whole title would take several hats physically at least. But now he had another headgear, Commander, Third Naval Construction Brigade. In practice, his first job was abbreviated to DEPSEA. The second, Commander of the Third NCB could be shortened to Seabee Boss.

Wooding was relieved by RADM Paul E. Seufer in late 1966, as DEPSEA and as Third NCB Commander. Seufer, as a captain, had been serving as OICC from February 1966 until he took over Wooding's job. He then wore all three "hats".

In June of 1967, the three "hats" were separated. CAPT A. R. "Mike" Marschall, peppery commander of the Thirtieth Naval Construction Regiment, took over from RADM Seufer as Third NCB Commander on a temporary basis, pending RADM James R. Bartlett's reporting on board. RADM Spencer R. Smith relieved Seufer as DEPSEA and OICC.

In mid-1966, seven Seabee Battalions were deployed in Vietnam. The Seabees, like the Army Engineers, were not capable of expansion at the same rapid rate as the contractor consortium. But the number of battalions of Seabees (and the number of Army Engineer battalions) was to grow gradually until 1968.

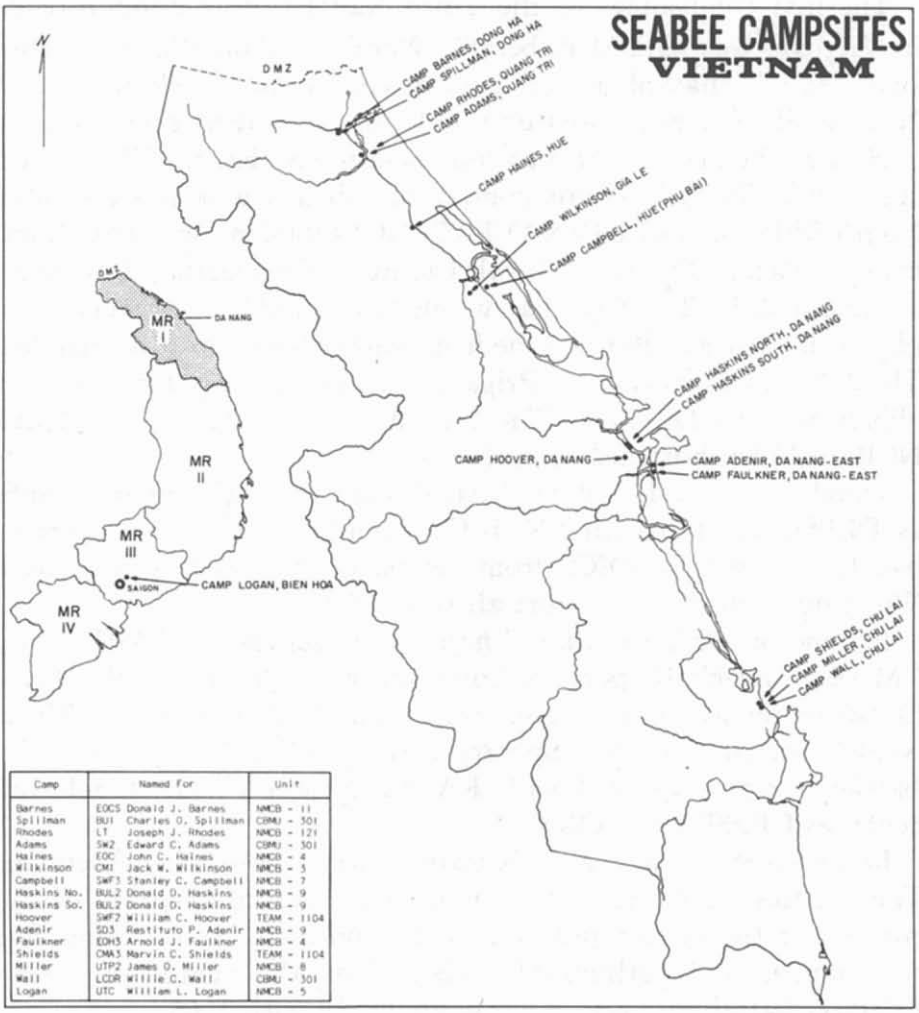
In 1968 the military engineer strength reached a peak. That

year, 12 NMCB outfits were deployed, 38 Army Engineer battalions and five Air Force RED HORSE squadrons. The total was 55,000 men.

The work of most of the Seabee Battalions involved the construction of waterfront facilities cantonments, storage areas, ammo dumps, and roads and bridges throughout the I Corps area.

In earlier chapters we have told of some of the challenges, dangers and problems the 'Bees met and overcame in this area.

One of the outstanding Seabee jobs was to build the 2,000-foot



Camp	Named For	Unit
Barnes	EOCS Donald J. Barnes	NMCB - 11
Spillman	BU1 Charles O. Spillman	CBMU - 301
Rhodes	LT Joseph J. Rhodes	NMCB - 121
Adams	SW2 Edward C. Adams	CBMU - 301
Haines	EOC John C. Haines	NMCB - 4
Wilkinson	CM1 Jack W. Wilkinson	NMCB - 5
Campbell	SWF3 Stanley C. Campbell	NMCB - 7
Haskins No.	BUL2 Donald D. Haskins	NMCB - 9
Haskins So.	BUL2 Donald D. Haskins	NMCB - 9
Hoover	SWF2 William C. Hoover	TEAM - 1104
Adenir	SD3 Restituto P. Adenir	NMCB - 9
Faulkner	EOH3 Arnold J. Faulkner	NMCB - 4
Shields	CMA3 Marvin C. Shields	TEAM - 1104
Miller	UTP2 James O. Miller	NMCB - 8
Wall	LCDR Willie C. Wall	CBMU - 301
Logan	UTC William L. Logan	NMCB - 5

FIGURE 21

Liberty Bridge at An Hoa, 21 miles southwest of Da Nang across the Thu Bon River.

The order was to build a 2,000-foot timber bridge that would carry the biggest vehicles, but it would also have to be tall enough, and strong enough, to withstand the 25-foot rise in the river during the rainy winter monsoon. And the area was known to be a Viet Cong stronghold.

The bridge was to be built on 90-foot wooden piles, driven into the riverbed 40 feet for stability.

That means that 1,080 piles would have to be driven. The traffic deck would have to be eight inches thick, and two lanes wide. The first estimate indicated that five tons of ten-inch nails would have to be used, and holes driven for at least 5,000 bolts two feet long and three-quarters of an inch in diameter, to give the structure reasonable integrity.

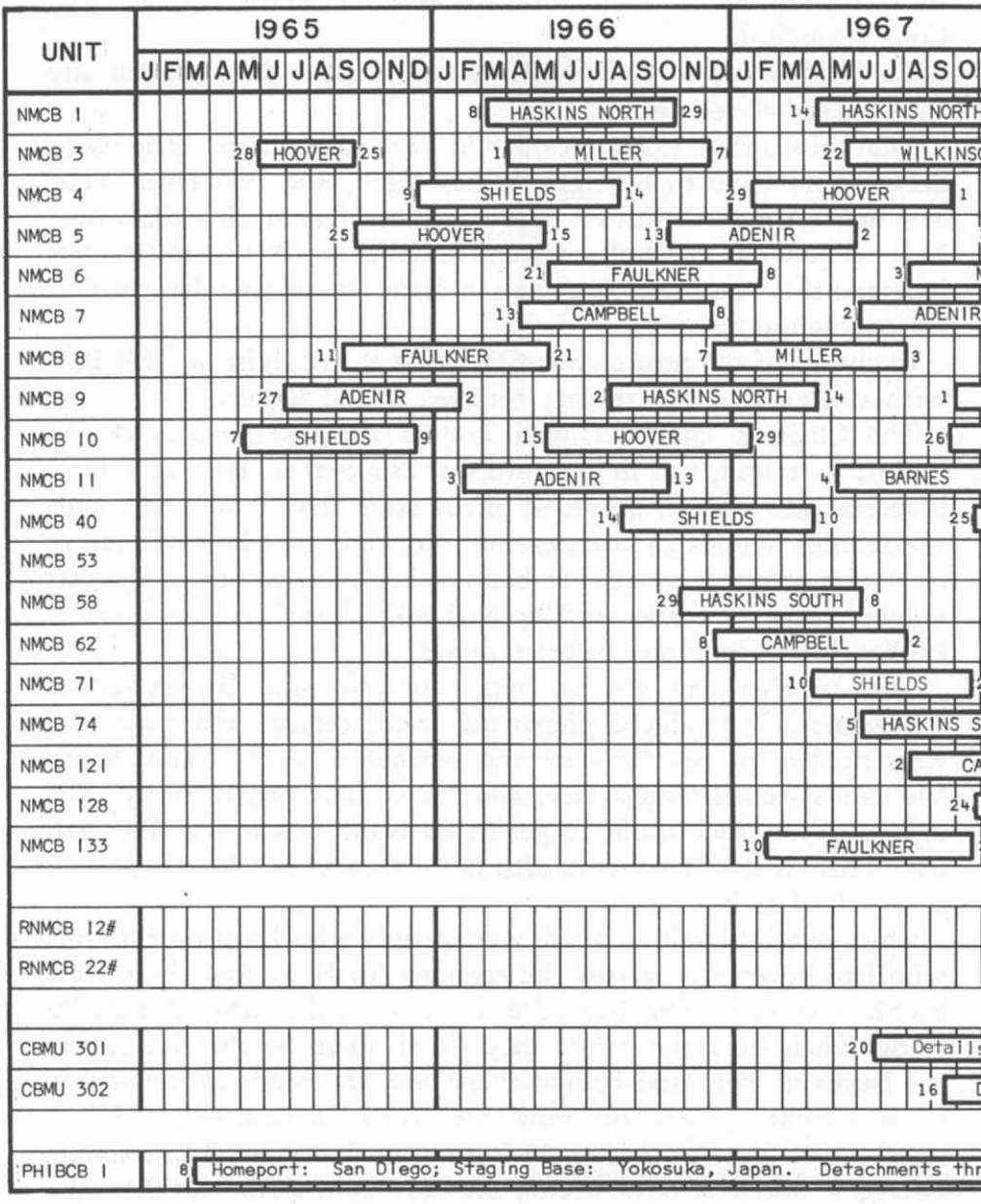
In charge of the project was CPO John P. Albright of NMCB–4, with a detail that was to vary between 25 and 50 men.

The Chief, a character well known amongst Seabees of the Fourth Battalion, was in his third war as a Seabee. He was a wiry, bespectacled man still possessed of the same drive which had made the Seabees famous 25 years earlier. Not only was he a veteran of two wars before this one, but besides, he had been one of the first volunteers for the Seabees in March of 1942 when they were founded. He had been a carpenter before that war.

The An Hoa area was an important economic district to the Vietnamese. It produced phosphate, coal, cement and glass. All were needed for the factories and businesses of Da Nang, South Vietnam's second largest city, and the surrounding territory. The only way for truck traffic to get to Da Nang was to use the small ferry boat. Military convoys also had to travel by this single link across the Thu Bon River.

Chief Albright said: "There were people who lived on this side who had never been across the river to An Hoa. And there were people over there who had never been down the road towards Da Nang. Their horizons, when they stood down by the river, were the banks in front and behind them, and the bends in the stream to their right and left. But now these same Vietnamese are able to stand on the Liberty Bridge, 35 feet above the water. These simple villagers' horizons now stretch far beyond An Hoa to the west and Da Nang to the north."

SEABEE VIETNAM DEPLOYMENTS



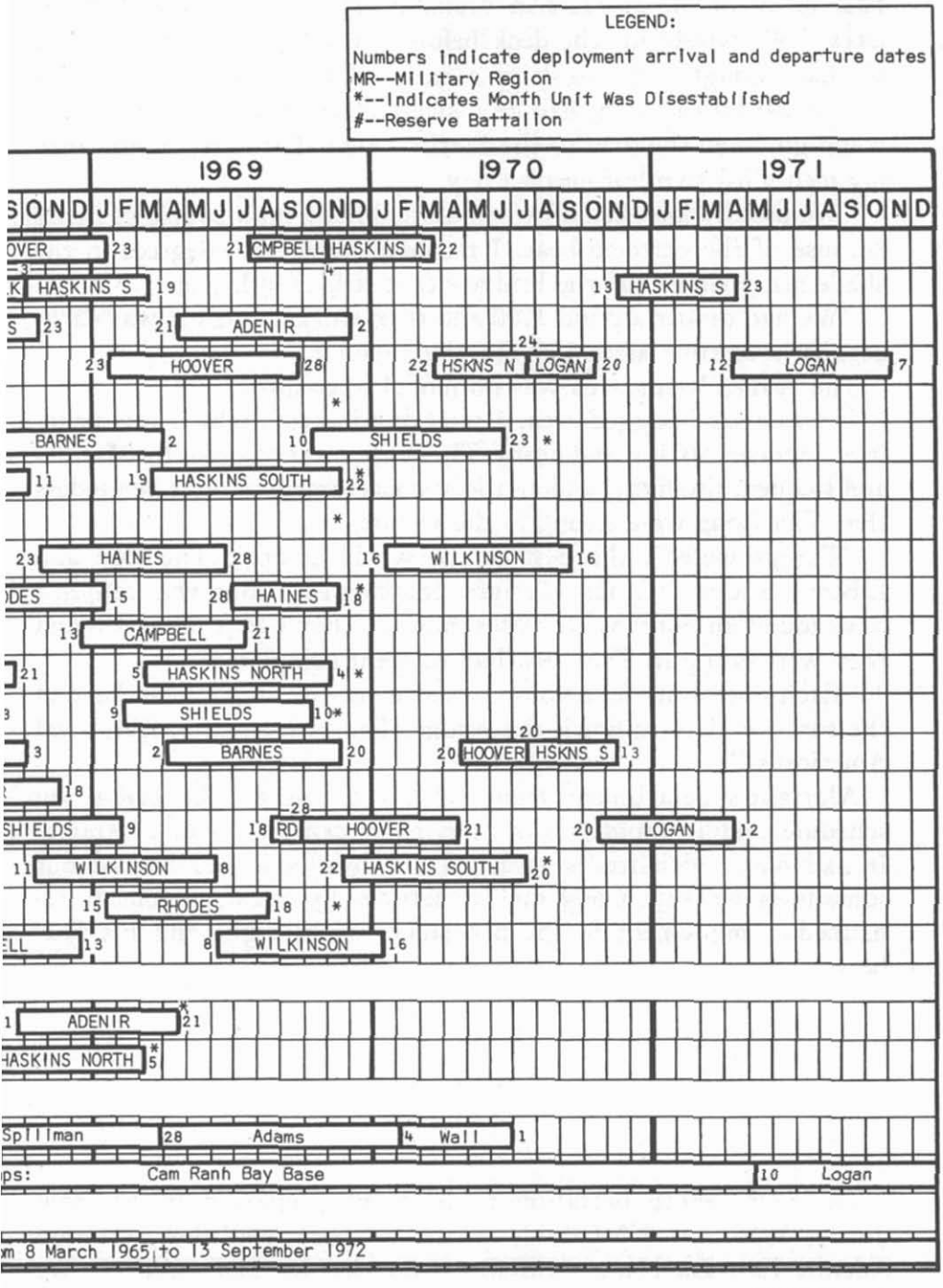

LEGEND:
Numbers Indicate deployment arrival and departure dates
MR--Military Region
*--Indicates Month Unit Was Disestablished
#--Reserve Battalion
1969
1970
1971
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
OVER 23
21 CMPBELL HASKINS N 22
HASKINS S 19
13 HASKINS S 23
S 23
21 ADENIR 2
23 HOOVER 28
22 HSKNS N LOGAN 20
12 LOGAN 7
BARNES 2
10 SHIELDS 23
11
19 HASKINS SOUTH 22
23 HAINES 28
16 WILKINSON 16
DES 15
28 HAINES 18
13 CAMPBELL 21
21
5 HASKINS NORTH 4
9 SHIELDS 10
3
2 BARNES 20
20 HOOVER HSKNS S 13
18
SHIELDS 9
18 RD HOOVER 21
20 LOGAN 12
11 WILKINSON 8
22 HASKINS SOUTH 20
15 RHODES 18
LL 13
8 WILKINSON 16
1 ADENIR 21
HASKINS NORTH 5
Spillman 28 Adams 4 Wall 1
ps: Cam Ranh Bay Base 10 Logan
m 8 March 1965 to 13 September 1972

FIGURE 22

Chief Albright and his Seabee detail worked at the usual intense pace of all of the builders in Vietnam. That means 14 or 15 hour days. "We would hit the deck before dawn and begin work when we had enough light to drive a nail," Albright said. "Breakfast was at 0930 if the roads had been swept clear of mines so our trucks could go down the road to the Marine camp. The Marines provided my men with two hot meals a day.

"We usually knocked off work around noon for a couple of hours because of the extreme heat. I recorded nearly 120 degrees in the shade many times. On the bridge site it rose even higher.

"We had dinner around 1700 and then worked until it was dark, usually sometime after 1900 in the evening."

The Seabee living area was no model of comfort.

It was a sand-bagged area, a well dug-in camp which was primitive, undeniably hot and dusty. The camp was protected by Marines and frequent fire-fights and artillery concentrations were reminders that Viet Cong were strong in the vicinity.

"Things weren't the best in the world at Song Thu Bon and Liberty Bridge," Chief Albright commented. "But you couldn't have found an outfit with better morale. They had a job to do and they were doing it. They just had to see it completed!

"Each one of my men volunteered to stay on in Vietnam beyond the rotation date to finish the bridge. They were real Seabees, real Americans!"

Albright's detachment from NMCB–4 finished the bridge on schedule and it rapidly was carrying a capacity load of traffic. It had many vicissitudes—washed out by floods and burned out sometimes by Viet Cong and sometimes by accident—but it remained a monument to the persistence of Albright and his Seabees.

* * * * *

The first Seabee battalion to be newly deployed in Vietnam during 1966 was NMCB–11, which relieved NMCB–9 at Camp Adenir, East Da Nang. NMCB–11 was led by CDR William W. Barron.

The first major work of NMCB-11 was to take over Nine's operation at the Naval Hospital, and carry it into later stages of expansion and improvement. They built an x-ray building, a fire station, a generator building, new quonset-type wards to expand the hospital another step towards its designed stage of 400 beds, and roads and parking areas.

Two other Seabee battalions, NMCB–1 and NMCB–3, came to Vietnam in March of 1966. The COs of these outfits were Commanders Richard T. Hardy and Richard L. Foley. NMCB–3, which had been deployed before at Da Nang, building roads and cantonments for Marines, came on this deployment to Chu Lai and built a new camp site at Rosemary Point. It was later named after Seabee Utilitiesman (2nd) J. O. Miller, who was killed in a mortar attack at Tam Ky.

Projects undertaken by NMCB–3 at Chu Lai included a barracks area for Marine Air Group 13, a POL tank farm and pumping facility, warehouse and open paved areas for storage, a helicopter pad and an addition to a field hospital.

Both NMCB–3 and NMCB–4 were functioning in the Chu Lai vicinity until Four was relieved in August, 1966.

The battalion relieving Four at that time was NMCB–40, the first of the newly commissioned battalions to be deployed in Vietnam. Forty's CO was colorful Ben Saravia, who was the model for the Seabee Commander in Milton Caniff's famous comic strip, "Terry and the Pirates".

NMCB–1, under CDR R. T. Hardy, was air-lifted directly from the Seabee training center at Davisville, Rhode Island to Da Nang in March 1966. NMCB–1 was employed principally in building a camp and material storage area for the 30th Naval Construction Regiment at Red Beach north of Da Nang. This camp was later named Camp Haskins after one of the Seabees of NMCB–9, killed earlier during the VC attack at Da Nang East. NMCB–1 also started a major complex for the Marine Force Logistics Command, located near Red Beach.

Other Atlantic battalions coming in to Vietnam from the east coast of the U.S. during 1966 were NMCB–7, which reached Hue-Phu Bai in April and NMCB–6, which reached Da Nang in May of 1966. The last two of the year, NMCB–58 came to Da Nang in October to relieve NMCB–1, and NMCB–62 relieved NMCB–7 at Hue-Phu Bai in December.

NMCB-6 built Marine and Army cantonments, LCU and small boat ramps for the Navy, roads, helicopter pads, storage, warehouse and ice plants, plus other service buildings.

NMCB-7 had a pioneer role in establishing its own camp in unpacified "Indian Country" terrain. These Seabees had a violent baptism of fire with frequent VC raids, including numerous mortar attacks. But they built Marine barracks and medical and warehouse facilities, drilled water wells, and also sent a sizeable detachment (more than 70 Seabees) to embattled Dong Ha at the northern extremity of South Vietnam.

Dong Ha was an important Marine base for action against NVA troops who were infiltrating into South Vietnam through the Demilitarized Zone. It was only 5 miles from the DMZ and the Ben Hai River, which served as the boundary between North and South Vietnam. At Dong Ha the Seabees were subjected to frequent mortar and rocket attack, harrassment by snipers and NVA mines.

The new outfit, NMCB-40, relieving NMCB-4 at Chu Lai, began construction of a crosswind expeditionary runway, paved with AM-2 aluminum matting, and it was rapidly completed by October 30th. This runway was of critical importance to stepping up Marine air operations. In Seabee history it ranked in need with any other single Seabee project in the Vietnam war emergency. Detachments from NMCBs 3, 1 and 6 assisted 40 with the job.

Other projects included water wells, barracks construction for both Marines and the Naval Support Activity. And a detachment from 40 was exposed to its share of hell-fire and brimstone while putting up barracks and headquarters buildings for a Korean Brigade, at Bi Bong, near much fought-over Hill 64.

NMCB-58, relieving NMCB-1 at Da Nang, completed the 30th Naval Construction Regiment camp at Red Beach and also the massive Force Logistics Command depot. The last of the COMCBLANT battalions, NMCB-62, which came in December of 1966 to relieve NMCB-7 at Hue-Phu Bai, was challenged by an urgent, large helicopter operational facility, including a 90,000 square yard parking apron constructed on fine sand which was fully saturated with water—and it rained during the whole construction period.

The Pacific Fleet Seabee Battalions deployed to Vietnam in 1966 were NMCBs 5, 8, 9 and 10. Five had been deployed earlier in Da

Nang until May of 1966, and they came back in October of the same year. NMCB–9 and 10 were also on their second Vietnam deployments.

NMCB–8 moved to Da Nang in September 1965. They were put to work building barracks, service buildings, roads and hospital facilities. They left Vietnam in June of 1966 and came back to Port Hueneme for training, re-equipment and leave. Eight was redeployed to Vietnam in December of 1966 when it relieved NMCB–3 at Camp Miller, Rosemary Point, Chu Lai.

NMCB–10, which had led the parade of Seabee battalions in the amphibious operation at Chu Lai in May of 1965, returned this time to Camp Hoover in West Da Nang. Camp Hoover was named in honor of SW2 William C. Hoover, who was killed in the same action at Dong Xoai as Marvin Shields.

There, under the command of the same CEC officer who had been in charge during the latter stages of the Chu Lai deployment, CDR Tom C. Williams, the Men of Ten built large-scale improvements in keeping with the rank of Da Nang as the principal Marine base in Vietnam.

Those large-scale improvements included a 5,000-seat amphitheatre for the Third Marine Amphibious Force Recreation Center. They also built warehouse structures, barracks, and fuel storage tank farms. Sizeable detachments were sent to remote (and dangerous) Marine outposts: one at Khe Sanh, originally a U.S. Special Forces—CIDG (Vietnamese militia) outpost at the extreme northwestern margin of South Vietnam, now taken over by U.S. Marines on the Laotian border. Here, at the northernmost outfall of the Ho Chi Minh Trail (or Trails), American and South Vietnamese forces were being challenged by constant harrassment and infiltration from NVA forces. This harrassment and infiltration was growing steadily, and GEN Walt decided to patch up the primitive airport at Khe Sanh.

The project was to rebuild the Khe Sanh airfield with aluminum matting. The work of upgrading the runway was assigned to NMCB–10. The job became most hazardous as the Viet Cong and NVA penetrations mounted, but the construction job was emminently successful. As 1967 wore on and the pitch of the battle increased near Khe Sanh, GEN Westmoreland enthused about the excellent job the Seabees had done in building this aluminum-

paved airfield. He called it one of the most outstanding military engineering feats in Vietnam. The Seabees replaced the old 3,300-foot airstrip of Pierced Steel Planking with a 3,900-foot (by 60 feet) smoothly-paved (AM–2) emergency airfield which cargo planes, including the sizeable C–123s and C–130s could use to support this isolated base.

It also was perfect for the helicopter operations which saved the life of this critically-placed base as the enemy later sought to turn Khe Sanh into the same kind of rout which they had inflicted on the French forces at Dien Bien Phu.

The detail from NMCB–10 refurbished the old French airstrip. They ripped up the Pierced Steel Planking and regraded the strip. Then they extended it by 600 feet and laid AM–2 aluminum planking for a smoothly finished surface. The whole job took only four days. The leaders of the detachment were LT Donald Woodford and Chief Shannon G. MacMillen. The Seabees worked both night and day—at night under lights, despite frequent sniping by the Viet Cong—to finish on schedule. Yet this hot outpost was barely warming then. In the next two years it was to grow furnace-hot. Seabee units were there then, under fire, to repair and rebuild it also. Of this, more later.

In mid-summer 1966, one of the new Seabee developments of the Vietnam war started to take form. During a visit by CAPT Blake Van Leer, Assistant Commander NAVFAC for Military Readiness, the problems of quick response to Marine field requirements were reviewed with the 30 NCR Staff and with several of the Seabee skippers. The delays involved in obtaining specific project approvals and construction directives from the MACV–DC for projects closely related to tactical requirements particularly disturbed the Seabees. Out of these discussions evolved a system for the 30 NCR, and later the 3rd NCB, to hold a stockpile of specially tailored materials known as Tactical Support Functional Components. This system was an extension of the Navy's Functional Component system and included pre-engineered bridging, bunkers, water supply systems, power generation, small tactical airfields and helo pads and similar facilities. The concept evolved rapidly and was an instant success. Over $100 million in materials was utilized by the Seabees and Marine engineers from this source.

A new accent on Civic Action in the Vietnam war now was putting new demands on the Seabee Teams. USAID programs had proved them very valuable in the effort to win over the backwoods people with the building of schools, roads, wells, dams for the Vietnamese, and the dispensing of medical aid (even *first* aid was desperately needed in this poor country).

And in President Johnson's public pronouncements about the war this year (1966), he had made it plain that he wanted a new emphasis on "pacification".

In his summary (REPORT ON THE WAR IN VIETNAM), GEN Westmoreland acknowledged the new emphasis (for both 1966 and 1967) on Pacification as an important part of our years of Development and Offensive.

He recognized the close interlocking of the political and military arms of the enemy battle order. "The Communist leaders apparently retained their faith in the interaction between political and military organizations."

He wrote about the need for a unified civilian pacification effort. And he pointed out the creation of the OCO (Office of Civil Operations) under Deputy Ambassador William J. Porter in November of 1966, and the appointment of L. Wade Lathram as its first director.

"Concurrently," Westmoreland wrote, "I elevated the MACV Revolutionary effort to a Directorate, thereby providing emphasis through a larger staff headed by a general officer. Although not responsible for the civilian advisory effort in support of pacification, I had long been concerned with developing means to assist and support it.

"There is no way to separate security operations from pacification operations. Furthermore, MACV furnished the province and district advisors who were central to the pacification effort. Thus by mid-1966 the Military Assistance staff division of MACV began to work jointly for me and for Ambassador Porter. Our interests and responsibilities were so interlocked that this arrangement served us both well."

GEN Westmoreland's primary focus, however, remained on breaking the enemy military force. "In 1966," he wrote, "we were progressively developing our ability to fight an elusive enemy on an

area battlefield while improving our troop and logistical capability. . . . We had to learn the enemy's tactics and how to deal with them, how to detect and defeat his attacks and ambushes, and how to locate and destroy his forces.

"One innovation prompted by the basic fluidity of the area battlefield was the system of interlocking fire support bases and improved night defensive positions developed to provide effective and continuous all-around defense.

"The system was not unlike the all-around defense practiced during the American Indian Wars. Major emphasis was put on fire support; artillery was positioned so that any point in the area of operations could be reached by fire from at least one and usually two or more batteries. . . .

"We also refined our fire support procedures for both air and artillery to insure prompt as well as reliable delivery of support. An elaborate system of firing checks and clearances was developed and instituted to guard against endangering civilians or adjacent units."

By the end of 1967, U.S. air power had risen to more than 2,000 tactical jet aircraft in the Vietnam area, including the RVN, Thailand, and the Navy carriers on Yankee Station in the Gulf of Tonkin. During the year, 100,000 sorties, not including the B-52 strikes, were mounted.

A large-scale operation, coordinated air, artillery and naval gunfire, was launched to relieve pressure on the U.S. Marines at Con Thien, under heavy NVA assault from North Viet guns in the Demilitarized Zone. This kind of heavy fire support operation was given another of those acronym soubriquets: SLAM. S for Seeking, L for Locating, A for Annihilating, M for Monitoring.

"SLAM operations," Westmoreland wrote, "became one of my most valuable and responsive tools. During the 49 days of the SLAM operation in support of Con Thien, we dislodged a firmly entrenched enemy, destroyed his prepositioned supplies, and forced him to withdraw at great loss—with massed firepower alone. At Con Thien we learned a lesson which proved to be of inestimable value later in the year at Khe Sanh."

Enemy firepower, too, was mounting in these years. Beginning in 1965 and 1966, large numbers of RPGs—"rocket propelled grenade" weapons which gave an infantryman the punch of an

artillery piece—appeared. In 1967, the 122mm rocket (about 5 inch diameter) and the 140mm rocket (about 6 inch) weapons were deployed against us—with ranges of up to eight and five miles, respectively.

* * * * *

On February 6th, 1966, the President and a delegation of senior American officials, including Secretary McNamara, arrived in Hawaii for a meeting with Premier Ky and other top members of the South Vietnamese government. The conference adjourned on the 8th of February after exhaustive discussions, but Vice President Hubert H. Humphrey went along with Premier Ky to Saigon for further sessions on economic and political questions. President Johnson and Premier Ky issued the "Honolulu Declaration" which pledged both countries to resist aggression, work for "social revolution", to pursue "free self government" and to "attack hunger, ignorance and disease" and continue with the "unending quest for peace."

In Los Angeles, en route back to Washington, President Johnson was more specific in a press conference: "The war we are helping them fight must be won on two fronts. One front is military. The other front is the struggle against social injustice, against hunger, disease and ignorance, against political apathy and indifference."

The President said: "This revolutionary transformation cannot wait until the guns grow silent and the terrorism stops."

He added that he was dispatching Agriculture Secretary Orville Freeman to Vietnam with Vice President Humphrey to plan for the future of Vietnamese agriculture. The President's remarks during and after the Honolulu Conference left no doubt of the importance he was assigning to assistance to South Vietnam in ways other than military. Clearly, in the President's thinking and that of his close advisers, the twin goals of "Pacification" and "Civic Action" were considered very important in our assistance to this small Southeast Asia nation.

The Seabees, an organization which chose as its shibboleth the

ability to fight and to build, "Construimus, Battuimus" received a large share of the Administration's interest. Already noted with special interest by the Department of State, Seabee Teams were to play an increasing role before the year's end. In one of his first moves as Director of the new Office of Civil Operations (OCO), L. Wade Lathram was to request a doubling of the numbers of Seabee Teams deployed as part of the pacification forces in Vietnam.

One of the earliest Teams to function in Vietnam in the year 1966 was also a Team which made an epochal mark in Seabee history in Vietnam. This was because the good works of this Team, 1007, demonstrated that such Civic Action efforts can sometimes overcome even the stubborn and thoroughly indoctrinated Viet Cong.

At first, after its deployment to Tay Ninh, a rough Viet Cong stronghold on the Cambodian border, the Team was beset by sniper and sapper opposition. But when the Team fortified the town of Long Hoa, built a fortification seven feet high around it—and, most important, got the townspeople to help out with building the earthen berm around the town—the episodes of VC opposition diminished markedly. The VC in this area were evidently discouraged by the fact that the people of the hamlet, including women and children, were filling and placing sand bags around the berm and stringing barbed wire to protect the village. Crowning insult to the Viet Cong was the fact that most of the townsmen volunteered to pick up shovels and dig the fortifications.

The Team leader, ENS Alexander C. Gunn, had risen through the enlisted ranks. Gunn, skin-cut, military, and a hard driver, was a prototype of the young Seabee Team leader. Premier Nguyen Cao Ky, the vigorous head of state in Vietnam, had visited with the Team and ENS Gunn during their work, and he returned to present Gunn with the Vietnamese Order for Meritorious Service when the tour was ending. Premier Ky also presented the Tay Ninh Commendation Certificate to EO1 Donald Morrison, for "always contributing a maximum amount of personal energy during the various rural construction projects". Later on, after the Team was disbanded (as Seabee Teams always are), LT Gunn was awarded the U.S. Bronze Star medal with Combat "V".

Besides building the defensive bunker around the center of the village, the Team had been busy mostly with grading activity and road repair. They built and graded a refugee camp. And probably the supreme gesture of good will towards the Vietnamese was made

by Equipment Operator First Class Thomas A. James, when a small Vietnamese child, girl-type, was adopted by him.

Farther north in Vietnam, due west and up in the mountains from Cam Ranh Bay, Team 1008 deployed in May of 1966. It was sent to the village of Dran, a very determined "Indian Country" stronghold where the Viet Cong had a peculiar resistance to the good medical works of the Team.

The Team Corpsman, HM1 Jerry L. Rowe, had to carry out his job of conducting medical clinics in an exposed environment. He covered nearly 20 villages, and the Viet Cong lost no time in warning the village chiefs that if the American medical specialist came back, he would not have long to live.

The Viet Cong also made it known to the village chiefs that any patient who showed up for a sick call would be exposing himself to definite danger of physical harm.

With the latter warning, while Rowe continued his rounds, his clientele dropped off to nothing. Shut off from his medical outlet, Rowe used his cross-training in other Seabee skills to work side by side with the other Team members on such jobs as upgrading roads and doing electrical repairs. His medical chores were henceforth limited to providing assistance to the nearby Chau Son monastery and taking medical care of Team members.

But Rowe, it developed, had the last laugh on the Viet Cong. He found a tiny Vietnamese boy at the local orphanage, named Nguyen Thanh Lam. After fighting his way through entangling spools of red tape and spending $150 for various fees and payments, Rowe was able to adopt the boy and christen him Clement David Rowe.

A Pan American flight from Saigon brought David home to his new family in the U.S. in December of 1966. That was the same month that Team 1008 finished its deployment. And young David joined three other Rowe children, all adopted. As he left Dran, Hospital Corpsman Rowe exulted: "If nothing else, I'm going to make sure one of these children gets out of here and gets a real chance at life."

In the building line, LT (JG) John C. Zander, the officer in charge of Team 1008, and his "Can Do" force were confronted with another nearly impossible building job at Dran, for which the villagers insistently asked.

The villagers said that one of their roads, built by the French,

had been constructed through the middle of a swamp near the village of Lac Lam. This one section, every time a rain fell, became a quagmire, and the only other way out of the valley was a 50-mile detour road through the surrounding mountains.

"Our biggest problem," said LT Zander, "was we just didn't have the right equipment for a project of this size. However, the stakes were really high and we couldn't say no to the Vietnamese request for a new by-pass road. All we had in the way of road construction equipment were two small bulldozers that were fine for making a road on level ground, but this by-pass road had to be cut along the steep side of a mountain. To top it all off, as soon as we started cutting the road, we ran into a huge shelf of rock. It was like trying to build the Empire State Building with 'Tinkertoys'."

The Seabees were impeded by the fact that they could not use explosives to blast the rock ledge away. The town of Lac Lam was close, and they were apprehensive that no matter what cautions they were able to take, the village center would undoubtedly be showered with fragments.

So LT Zander and his second in command, Equipment Operator Chief Robert C. Curtis, decided to chip it away laboriously with their small bulldozer blades, and with drills.

At last, the by-pass road was finished. The farmers had a direct link, serviceable in all kinds of weather, between their home area and the large markets along the coast. And the Vietnamese regional chiefs made sure that Zander and Curtis were given recognition for the achievements of their crew. They were awarded the Vietnamese Medal of Honor.

It was remarkable that the ingenious, inventive, and—above all—the humanistic spirit of the Seabees was still, 20 years after World War II, so strong in these young men. It was apparent they were as bright-eyed and bushy-tailed as the young men had been during WW II, as clever at "making do" with whatever resources they had in hand.

Their inventiveness and humanity generally won over the local villagers, just as a grateful French family had named their newborn daughter "Seebee" in response to kindness of the first Seabees ashore at Omaha Beach, Normandy Beachhead, June 6th, 1944.

As the number of Seabee Battalions in Vietnam grew, and the pacification authorities enthused about the results which the Teams

were achieving, Civic Action efforts were growing in the battalions themselves. For the battalions were discovering, like their smaller units, the Teams, that to win over local inhabitants, visiting troops should offer some positive assistance and, if possible, instruction for the locals in more highly skilled trades than mere manual labor.

The three Seabee Teams functioning in Thailand during 1966 had approximately the same program as the Vietnam Teams. Teams 0508, 0305 and 0306 drilled water wells, improved roads, built earthen dams (much cheaper and more practical to build than the concrete kind), and ran extensive Medcap programs to take care of the sick. As in Vietnam, the Medcap program found that much of the illness was skin and stomach trouble, and the most common remedy was the same as in Vietnam: soap.

The Teams in these three areas were at Terng, close to Thailand's northern border with Laos, and Phon Thong and Ban Si Yaek, farther south but still in the wild country verging on the Laotian border. All of these areas were suffering from infiltration in these days from wandering North Vietnamese guerrillas. These guerrillas had infiltrated through Laos, where a sizeable NVA army was fighting against the Laotian government, and were attempting to stir up revolt against the central Thai government in Bangkok and their local representatives.

To fend with this threat, the Thai government changed their general techniques of utilizing Seabee Teams. Beginning in November 1966, the Teams passed from the Accelerated Rural Development program and went under the Thai Border Patrol Police Program.

Border Patrol Police Program teams were modelled on the Seabee Teams and dedicated to the same proposition of civic action for villagers. But their numbers were slightly different, 15 men instead of 13, and their building equipment was lighter than the Seabee standard. The Border Patrol–Seabee combination teams were to work together in the backwoods areas where Communist guerrillas were attempting to build a foothold, and win over locals with good works such as roads, dams, bridges, water wells and medical service.

By the end of 1966, in the three years the Seabee Teams had been functioning in South Vietnam, they had built six refugee villages, ten school houses, 29 new bridges (with 50 others repaired and

renovated). Also, 90 miles of new roads and major improvements to 270 miles of existing back-country roads and highways. They had also built 18,000 feet of new runways for provincial airfields, and 13 earth-fill dams.

Also, the Navy Corpsmen assigned to each Seabee Team, on an average deployment thus far had treated an average of 3,500 Vietnamese.

As the role of the teams increased, so did the determination of the Viet Cong to resist the Seabee involvement. The Viet Cong and NVA were peculiarly sensitive to any civil action plan which had been so successful. And the Seabee Teams, like the detachments of the battalions sent into the backwoods area, were peculiarly apt targets for marauding Viet Cong and NVA forces. Where the VC chose to attack and annoy the Teams, they were choice as targets because the Seabees were few in number. But as at Dong Ha, Thuong Duc, or any one of the Seabee remote sites, the Teams and details rapidly learned how to live up to the Seabee motto, though outnumbered: "We Build and Fight!".

65. Seabee Memento Presentation to Westmoreland. General W.C. Westmoreland, Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), is given a "Silver Seabee" by RADM J. V. Bartlett, Commander, Third Naval Construction Brigade. Looking on is CAPT C. W. Turner, Commander, 30th Naval Construction Regiment. The presentation took place at Brigade Headquarters, Camp Haskins, Red Beach—about 10 miles north of Da Nang. The memento marked the 25th Anniversary of the Seabees, in 1967.

Photograph by Richard Tregaskis

66. Housing Project Dedication—Da Nang. Vietnamese dedicate a housing development adjacent to Da Nang Airfield. Construction was done by a detail from NMCB-58 as a Civic Action Project. Representing the U.S. at the ceremony were CAPT A. R. Marschall (Commander, 30th Naval Construction Regiment) and MGEN H. Nickerson, Jr. (Commanding General, First Marine Division), (L & R) flanking their Vietnamese officer host. Time was January 1967.

Photograph by Richard Tregaskis

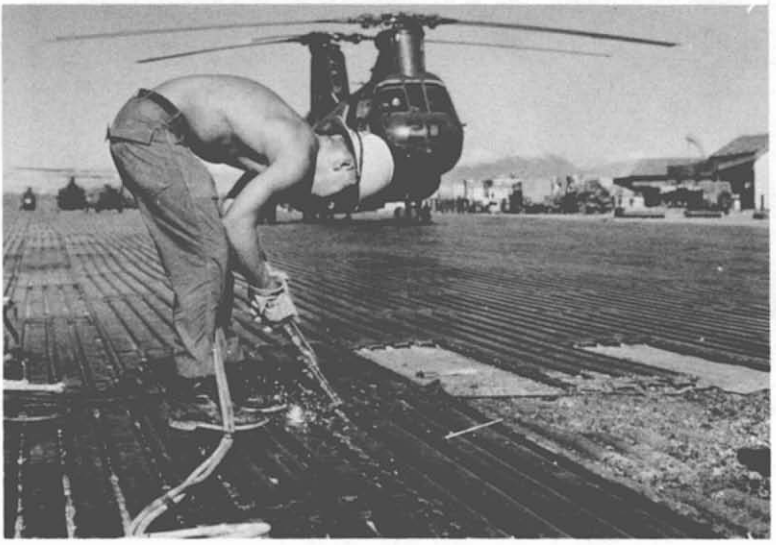
67. **Photographer at Work—1967.** Moana Tregaskis takes pictures of the omnipresent kids at dedication of Seabee-built village for Vietnamese. Note, infants generally go pantless as practical sanitary measure.

Photograph by Moana Tregaskis

68. **Seabees Working, Camp Hoover.** CDR Tom C. Williams, Commanding Officer of NMCB 10, with Richard Tregaskis. Chap in the middle is LCDR Jerry Dunn, Operations Officer of battalion, January, 1967.

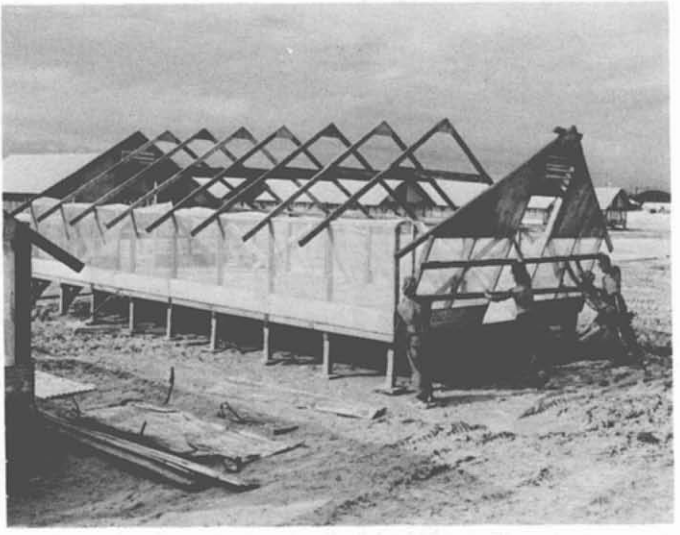
69. President Johnson Awards MOH to Seabee Shields' Widow. President Lyndon B. Johnson presents the Medal of Honor to the widow of Marvin G. Shields, on 13 September 1966. (L–R): Secretary of the Navy, Paul H. Nitze; Seabee Shields' wife, Joan; his daughter, Barbara; President Johnson; and Senator Henry M. Jackson, of Shields' home State of Washington.

70. AM–2 Runway Repairs—Dong Ha. Seabees of NMCB–11 work on a type AM–2 (aluminum) runway matting that was damaged by enemy fire, as helicopters continue to operate overhead.

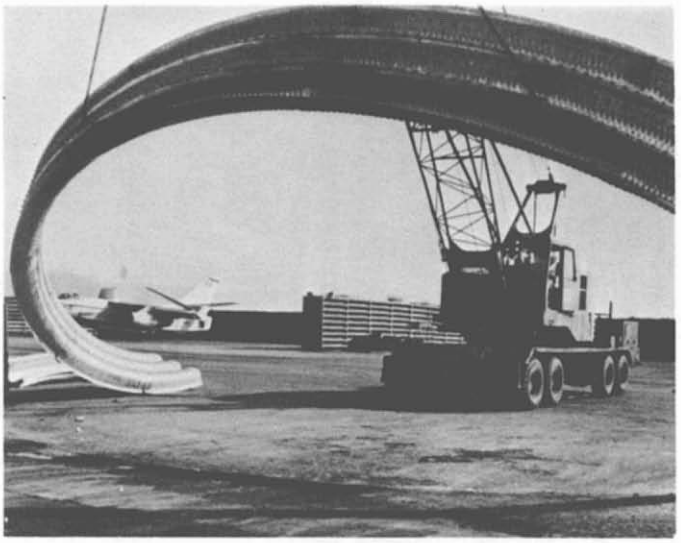


71. M8A1 Parking Apron Repairs—Dong Ha. Seabees of NMCB–11 repair and relay a type M8A1 steel matting of a parking apron which was damaged by enemy mortar fire.

72. **"Strongback Huts"—Quang Tri Combat Base.** Seabees of NMCB–11 are building hundreds of "Strongback Huts" for a Marine camp. These units were later converted to "SAE Huts" by replacing the tenting with corrugated sheet metal roofing.



73. **"SEA Huts"—Da Nang.** A "SEA Hut" is being erected by the Seabees of NMCB–10, for the Marines.

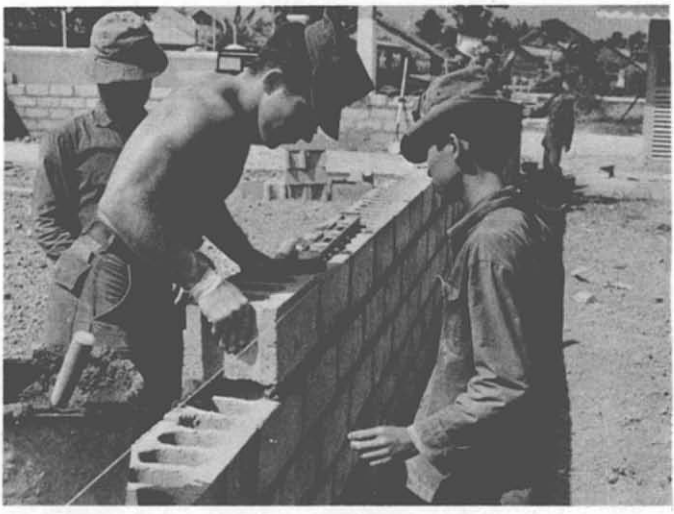


74. **Wonder Arch Aircraft Shelter—Da Nang.** A 3-rib section of a steel "Wonder Arch" aircraft shelter is being lifted into position on a parking apron at the Da Nang Airbase. Seabees are from NMCB-3.

75. **Wonder Arch Aircraft Shelter—Military Region I.** Sea bees of NMCB-121 pour concrete to form a protective cover for a "Wonder Arch" aircraft shelter for Marine Aircraft Group 16, located in Military Region I.

76. Suspension Bridge—Thu Thua. Construction of this suspension bridge was started by Seabees from Seabee Team 0604 (NMCB–6). This 50–meter footbridge was then completed by Team 0410.

77. Replacing Collapsed Bridge—Phuong Dien. A "Civic Action Team" from NMCB–10 and local Vietnamese work together to complete a new bridge near Phuong Dien, replaceing old, collapsed structure.



78. Trainee Laying Cement Block—Chau Doc Province. Seabee Tommy Allen of Seabee Team 5803 of NMCB–58 shows Vietnamese trainees the correct way to lay concrete block while building a 10–room nurses' dormitory.

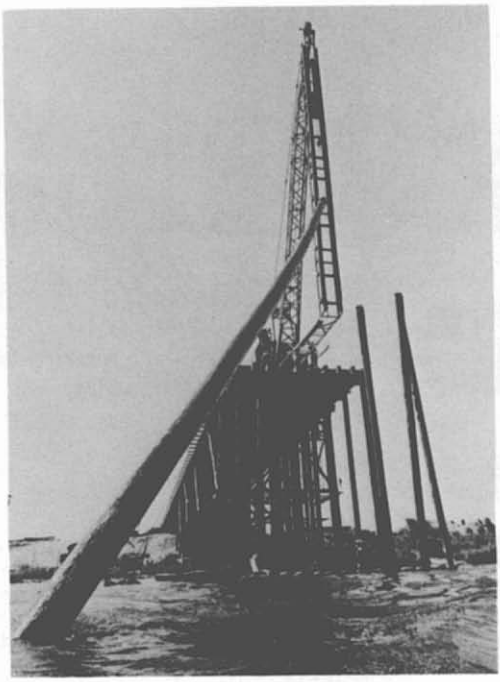
79. "Sick Call"—An Giang Province. Hospital Corpsman Frank O. Pacetti, attached to Seabee Team 0509 of NMCB–5, holds "Sick Call" while on "MEDCAP" (Medical Civilian Assistance Program).

80. Camp Haskins—Da Nang. Aerial view of Camp Haskins, Red Beach, Da Nang, looking north, showing NMCB–1 cantonment, the 30th NCR Headquarters, and NMCB–9 camp in the background.

Photograph by Moana Tregaskis

81. Willing But Battered Volunteer—1970. Seabee (Equipment Operator 3rd Class) John A. Kuenstler, of NMCB 62, left, talks to his Senior Chief Jarvis O. Wood at embattled Hill 55 near Hoi An. Blown up three times while manning his bulldozer, the 24-year old Kuenstler agitated with his chief to *rejoin his unit, when seriously injured.* A cowboy from Artesia Wells, Texas, Kuenstler said of the Seabees' work: "This is the best job there is. You can see what you're doing."

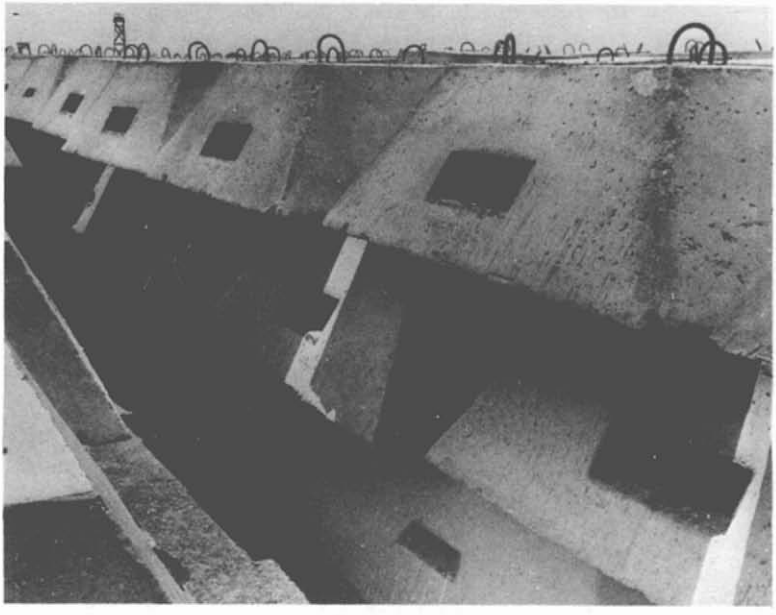
82. President Nixon Greets Returning Seabees. President Richard M. Nixon visits with Seabees of NMCB–3 who arrived from Vietnam just one hour prior to President Nixon's own arrival at the Naval Air Station, Point Mugu, California, on March 21, 1969.



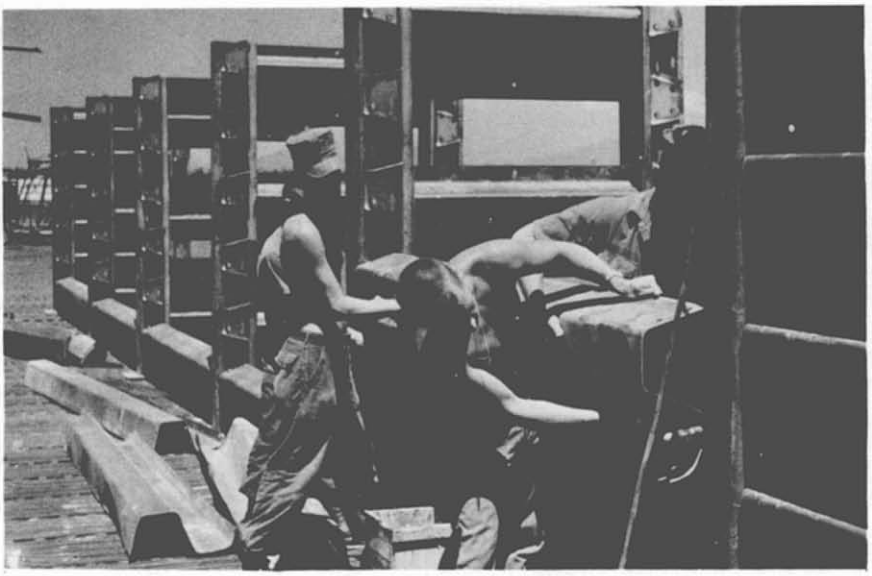
83. Driving Piles for "Liberty Bridge"—South of Da Nang. Seabees lift an 85′ pile into position for driving. In all, 800 piles were driven 40 feet into the river bottom in the construction of the "Liberty Bridge"—about 16 miles south of Da Nang.

84. View of "Liberty Bridge." This 2,040′ timber bridge is the longest ever built by the Seabees. It is also the longest timber bridge in Vietnam.

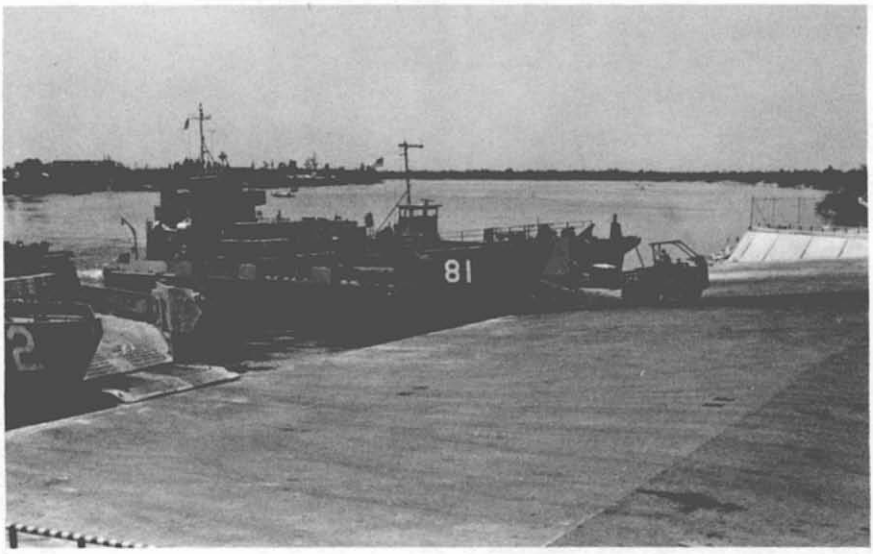
85. Viet Cong Attack on Hospital—Da Nang. View of destruction of a segment of the new U.S. Naval Hospital, Da Nang—then under construction by NMCB–9. The hospital, and an adjacent Seabee camp, were attacked by the Viet Cong on October 28, 1965. During the attack, two men were killed and 93 were wounded. The Seabee camp was subsequently named "Camp Adenir"—in honor of SD3 Restituto P. Adenir, who was killed in that attack.



86. Precast Concrete Bunkers—Dong Ha. The Seabees of NMCB–5 produced over 800 of these slope type parapet bunkers, in their precast yard at Camp Barnes, Dong Ha. A trench was dug and the parapet bunker was placed across it.



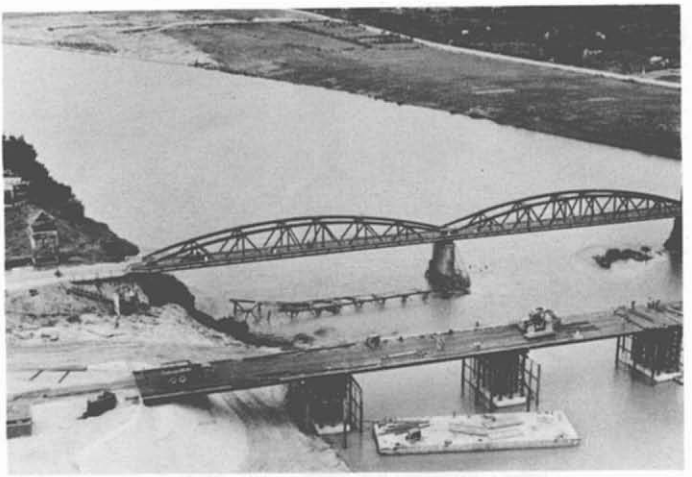
87. Aircraft Revetment Assembly—Phu Bai. Seabees of NMCB–133 assemble revetments on the aircraft parking apron, at Phu Bai, for Marine Air Group 36 (MAG–36). The revetments are built in a "U" to envelop the aircraft on three sides. The assembled revetments are filled with sand.



88. Landing Craft Ramp—Hue. A Seabee forklift operator from NMCB–121 works at the LCU (Landing Craft, Utility) ramp at Hue, in Military Region I.

89. MoMat Runway Repairs—Near Hue. A "detail" of Seabees from NMCB–4 positions and splices "MoMat" sheeting on the runway at Camp Evans airfield, located about 20 miles north of Hue.

90. Road Rehabilitation—Vinh Dai. Members of NMCB–53 pave a road with asphalt, at Vinh Dai. Original road surface had to be totally reconstructed.



Photograph by Richard Tregaskis

91. Fiercely Contested Bridge Restored by Seabees of NMCB–10. Embattled bridge at Quang Tri, 1970, being replaced by 900-foot wooden structure built by Seabees. Railroad bridge, rear, had been serving as replacement for road traffic. Bridge destroyed by enemy is at center.

92. Bridge Restoration—Lap An Bay. NMCB–1 Seabees jacking the Hoi Can Bridge. This was part of the program of Vietnamese National Railway System bridge restoration. The Hoi Can Bridge is near Lang Co, on Lap An Bay, about 25 miles north of Da Nang.

93. Runway Resurfacing—Phu Bai. Seabees of NMCB–133 resurface the runway as a C–130 Hercules aircraft takes off from the completed end of the runway.

Photograph by Richard Tregaskis

94. Seabee Hero at Civic Action Work—1967. LT Harvey Henry, doctor of NMCB 9, won Navy commendation medal for doing open-heart surgery on wounded Seabee under fire at Da Nang, October 28, 1965. In that attack, the battalion suffered heaviest casualties of any Seabee outfit in Vietnam War. Here, "Doc" Henry palavers with village people at hamlet near Da Nang as he brings rice (background) to settlement.

CHAPTER EIGHTEEN

LOE—Genius at Work

BRIG GEN Daniel A. Raymond, the tactful, mild-mannered new MACV Director of Construction, was one of the first to know about the discouraging, if not overwhelming, problem of the $200 million "Underfunding".

So, of course, were Bert Perkins, the RMK–BRJ boss, and the NAVFACENGCOM Chief, RADM A. C. "Ace" Husband. Husband and his second-in-command, RADM Enger had been aware of a funding problem and the need for a solution, but they had not realized how large an amount was involved.

A tremendous effort was needed to solve this problem—to find its root and persuade the Congress that more money was needed, and quickly. And another great series of efforts was required to provide against any such underfunding emergencies in the future.

The solution of the underlying problem was the brainchild of a captain at NAVFAC headquarters who then served as Comptroller. He was himself a branchild who had graduated No. 1 in the Class of 1946 at the U.S. Naval Academy, and continued to win awards for his work: CAPT Donald G. Iselin, promoted to Rear Admiral in 1972.

The system which he evolved was called "Level of Effort", and it was a method of tailoring the contractor capability to a selected level, within a specified funding availability, and assuring a continuing flow of work so that the capability was effectively used.

Iselin, as boss of the task force sent to Vietnam by RADM Husband to solve the problem, was the inventor of the Level of Effort plan. And he was also the chief salesman and promoter of the plan, both in Southeast Asia and in Washington.

RADM Enger, then Deputy and later Commander of NAVFAC, said of Iselin:

"It was his genius which solved the problem and made it work."

Tall and dark, lean and serious, Iselin had transferred to the Civil Engineer Corps of the Navy in 1948. He had gone to Rensselaer Polytechnic Institute and had received his Bachelor of Civil Engineering and Master of Science degrees there.

After many assignments, including being Project Manager for America's first large-scale nuclear power plant for the production of electricity, he was assigned to the headquarters of the Bureau of Yards and Docks (BUDOCKS). He was later Executive Officer to then CAPT Enger, commander of the Washington-based Yards and Docks Chesapeake Division.

In November of 1965 Iselin became NAVFAC's Director of Programs and Comptroller. About a year later, he was plunged into the $200 million crisis.

BRIG GEN Raymond later recalled the dawn of that $200 million crisis. "I was apprised of it in July of 1966. The reason I know so well is that I was scheduled to come back for my 30 days Rest and Recuperation. I spent most of my 25 days in Washington working to get that $200 million—briefings of the Secretary in the Defense office, specifically Mr. Ignatius and the JCS—and I had to go over and testify before Congress on it. . . .

"The man I will always remember most on getting the $200 million to bail us out was Foster Lalor . . . he and I were together back there, those 25 days. . . ."

The reference was to CAPT Foster M. Lalor, Jr. (Rear Admiral in 1971), then Southeast Asia Program Coordinator at NAVFAC Headquarters. The hearings and briefings in which Raymond and Lalor took part were for the Assistant Secretary of Defense for Installations and Logistics (Ignatius), the Joint Chiefs of Staff, and especially with the involved committees of Congress.

BRIG GEN Raymond remembers: "We prepared a position as to what happened, describing the fix we were in, and developing what we needed, why we needed it, and the consequences of not getting it."

At the same time, the NAVFAC Chief, RADM Husband, was being acquainted with the underfunding by the OICC chiefs and the contractor bosses in Saigon.

The night that the beetle-browed Husband arrived in Saigon, the contractor chief, Bert Perkins, told the NAVFAC chief about

the problem. Next day came the official briefing, with RADM P. E. Seufer and Perkins.

RADM Husband summarized: "The crux of the problem was that the OICC had been given a program from each of the Services with so many dollars to accomplish it. The contractor had only then been able to price-out the program with relative confidence. The major elements of the designs had then been completed, and the contractor had gained some experience in this new, accelerated and diversified program from which he could provide a more realistic price projection. From this new vantage point the program was again added up and it came out about $200 million more than the funds assigned.

"It was a bit of a shocker—not that we were over, but how much. However, I quickly realized that regardless of how we got there, there's where we were. My biggest concern was that this time we had to be right."

Back in Washington, the hurdles fanned out thick, fast and thorny. Admirals Husband and Enger and their "close-in" top associates, CAPT Foster Lalor and the NAVFAC Comptroller, CAPT Iselin, had many agonizing sessions about the $200 million. The whole upper echelon of NAVFAC was shaken up by the bushy-browed commander and his intent, sharp-eyed deputy. All four men, and BRIG GEN Dan Raymond, the MACV–DC who had come up from Saigon, also burned the overtime lamps in the Pentagon offices of the Assistant Secretary of Defense, Paul Ignatius—and in that of Ignatius' deputy, Ed Sheridan.

As earlier noted, CAPT Lalor and BRIG GEN Raymond had almost-daily trips to Congressional sub-committee hearings, and also to the Defense Department's conference rooms for briefings and discussions.

The Associated Press, in a national story reached the following conclusion: "The Pentagon admits it misled civilian contractors in the billion dollar Vietnam construction program by overstating probable contract awards and under-estimating costs. In the wake of reports alleging company waste and mismanagement, Defense officials praised the private combine known as RMK–BRJ for doing 'an amazingly competent' job under tough circumstances."

In early October of 1966, CAPT Iselin and Truman Joiner, the Morrison-Knudsen comptroller, went out to Vietnam from Wash-

ington to survey the situation. By this time, Vietnam's new "Ports-A-Go-Go" were opening, and eight million square feet of covered storage, more than twice the Pentagon square footage, and three million square yards of open space had been constructed, with security measures like fences and lights and guard systems supplied. And whereas cost distribution in Vietnam in the past had been provided by bins of hand-made vouchers and receipts, now in the RMK–BRJ headquarters a Data Processing system was being installed to provide for rapid cost collection and analysis and inventory procedures.

The extent of the underfunding had resulted in a lot of high-level attention, not only to get the money to keep the urgent program moving, but also to avoid a repetition of the problem. The latter proved to be the more difficult challenge and as is true in solving most complex problems, the first step was to determine the cause—and the first major contribution of CAPT Iselin was the complete definition of the problem. Our earlier discussion of the operation of the "imperfect system" and the consequences have been derived mostly from his analysis of how the program got into a $200 million shortfall. It is easy to understand in the reading. It was far more difficult to perceive that these several actions were involved in an interplay. Some highlights of the Iselin trip follow to develop a more complete understanding of the process by which the real problem was identified.

Iselin recalled that three-week trip and the discovery which led to a new system of handling cost-reimbursable contracts:

"It was fairly obvious to me after a few days, some briefings and talking to the people out there, that we were faced with some very unusual situations. We had to satisfy the customers—Army, Navy, Air Force. Without us, there was *no way* to build the logistics base that was the critical element in permitting the troops to carry the war to the enemy.

"Well, it turned out that these customers, in addition to telling the OICC what jobs they wanted done, wanted to tell him when he was supposed to start those jobs, when he should complete them and how much he was supposed to do each one for.

"How they fixed all the variables, no one knows, but it didn't turn out to be an equation—something had to give. . . . In any case, the customers were dissatisfied, and properly dissatisfied, because

they were unable to plan upon having a particular facility at a particular time; and when costs turned out to be 50 or 100 percent greater than the 'guesstimate', they had to cancel other projects to obtain the money. So, in desperation, the customers tried to dictate more and more of the 'how' and 'how much'. But they were only attacking the symptoms, not the cause.

"The OICC was working under a procedure by which he figured all the requirements—in the way of manpower, materials and equipment—for all of the projects that the customers said they were going to give him, and then he arranged to get that many men, both from the States and locally, as well as plenty of materials and all the equipment needed to accomplish all the jobs in the time frame that the customers said they needed. At the peak, this added up to 50,000 men, $150 million worth of construction equipment, and $200 million of materials.

"But what would happen: First, by the time the contractor got the labor force assembled and his equipment and materials into the area, the customer's needs had changed, so he had to mobilize for a different set of projects. Secondly, even for those projects that didn't change, something would frequently occur to keep those jobs from being worked on expeditiously. Either we couldn't get the particular materials, or the design wasn't completed, or the real estate wasn't available and we'd have to re-site the project, which also meant redesign.

"For a myriad of reasons, when the people were available then the job wasn't ready. But you still had to pay the people because you could only get them under long-term contracts. And the people in one location really weren't available to put on another job because the other job already had sufficient manpower on it.

"And thirdly, the customers pulled back a number of jobs that the OICC had been planning on. In some cases, the customer got less money from Washington than he had anticipated. In others, he had to use his funds to pay for on-going projects whose costs had gone way up, and thus couldn't give the new projects to the OICC.

"It's only a firm backlog of hard work that you can eat into with a construction force."

As Iselin saw more of the existing construction system, he was deciding that one of the major needs was a control over money flow

so that the customer (Army, Navy, Air Force) would know just how much money was available and how much could be done for it.

Also, while there were a lot of projects on the OICC's books—lots more in fact that he could accomplish for the funds that had been given to him—only a small number of projects were actually fully ready for construction.

Iselin summed up this stage of development:

"So, the theory of building up the work force to be able to tackle all the jobs as fast as they were identified was generating this funding problem; and worse yet, its results caused the OICC's and the customers' attention to be diverted to arguments over the apparently high cost of work, rather than turning their efforts to solving problems of firming up the workoad—speeding up design, holding down changes, obtaining real estate clearances, and providing a steady *work flow* to the contractor.

"What was needed was a hard-nosed objective analysis of just how much work could be done for the dollars remaining, and then this picture had to be given to the customers so they could select their highest priority projects, and both the OICC and the customer could then get on with high-balling those projects through. It meant that some projects just weren't in the funding picture, no matter how valid they were. If they were to be done, it would have to be by engineer troops or by obtaining more funds for the project in a later appropriation bill." Iselin made a rough analysis for the OICC and the customer, which at that time (October 1966) he called the "ABC approach". The "A" projects were definitely in, the "B" projects were in the grey area, and the "C" projects were out.

Both the OICC and the customers realized that they had some soul-searching to do.

Iselin went back to Washington in late October and worked out a report of his findings. But his system, later called "Level of Effort", did not develop until early the next year. In February 1967, when RADM Husband was anxious to further improve the management system for controlling the operations of the giant construction mechanism then at its peak, he sent Iselin out to Saigon again with a unique mission. He was to be the direct representative of the Chief, RADM Husband, and his mission was to work out some way to smooth out the management of the construction effort, and

prevent a recurrence of the previous year's $200 million shortfall. He arrived in Saigon on the 6th of February. On the 7th, he set up a task force with five task groups. They were all engineers, but each a specialist in fields like Finance, Cost Reduction, Equipment and Materials, etc. Two of the top men came from Washington with CAPT Iselin: CDR Paul W. Forehand (Captain in 1970), Deputy to Iselin in the Task Force, and CDR Paul D. Olson (Captain in 1971), heading up the Finance Task Group. At the Pacific Division of NAVFAC, in Pearl Harbor, RADM William M. Heaman assigned CAPT Albion W. Walton (Rear Admiral in 1972) and LCDR David E. Bottorff to assist Iselin. Also, CDR Robert M. Sutley (Captain in 1971) came from NAVFAC headquarters.

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Senior Program Analysts also came out from NAVFAC to assist Iselin in nailing down the exact status of the projects which had been authorized, which ones were en route to the OICC, and which were still in the planning stage by the customers. Walter Douglas handled the Air Force program, Geldard "Gil" Woerner the Navy, and Lyle Jones the Army program.

The rest of the staff of 15 were assigned from the OICC organization—including Commanders Philip Birnbaum and Robert Dickman.

These were a hectic and pressure-packed two weeks. Some of Iselin's most urgent sessions in Saigon took place that first week in February, with RADM Seufer, the OICC, and his Deputy, CAPT Spencer R. Smith. (Smith became Rear Admiral, and succeeded Seufer in July of 1967.)

Seufer, Smith and Iselin had a very central and vital decision to make: Whether to continue with the heavy emphasis on using the contractor consortium—in which case they would have to realize more money and appropriations from Congress—or to close down the contract and put the main reliance on the rapidly developing Army and Seabee echelons of construction troops. Iselin recalls:

"We decided we had three basic alternatives. First, we could have

a crash close-down of the entire contract right then and turn everything over to the troops, including something between ten and 30 million dollars in cash that we had left. This would be quite a shock to the system, because we estimated that the construction program would lose up to six months in the crash transition. Second, we could finish all the present jobs that the customers had given us and pull out, and let the troops handle all construction after that. We would need some 50 million dollars more cash than we currently had to do all the work the customers wanted. (The $200 million supplemental funds provided by Congress earlier had not provided enough money to permit all the Service needs to be met, but had permitted the OICC to continue with all the work then underway and to accept additional high priority projects.) This alternative would provide for a better transition to troop construction, but we didn't know where we would get the $50 million from.

"Or third, we could finish all present jobs in combination with taking on $100 million worth of new work (and $100 million new cash) from the next year's program (known as the '67S Program). If we chose this alternative we would basically work in four major enclaves, and get out of the rest of these 30 smaller sites that we were in, turning them over to troop engineers. This would be the smoothest transition, and would give time to build up the troop construction forces to eventually replace the contractor. Also, if we got the $100 million of new projects (and the associated $100 million cash), we would only need part of that cash to do those jobs—just enough to pay the labor, because we had already paid for the materials and equipment. Then we could use the rest of the cash to pay the labor for other projects that we already had on the books. A sort of a package deal. So Spence Smith and I decided that the thing to do was to take that third choice and recommend it all the way up the line.

"The first chart that we ever drew on that third alternate showed us out of business on the first of April, 1968: Gone, closed out. Books balanced. A total completed contract of $1,220 million. And the troops would handle all future construction.

"After coming to this conclusion with Spence (Smith) and talking to RADM Seufer, I put together a briefing which drew out these three alternative plans and priced them out. Then we indicated

what would have to be done in Vietnam and in Washington for each of the three plans. I gave the briefing to BRIG GEN Raymond on the 12th of February. On the 14th of February BRIG GEN Raymond and I left on the plane to come back to Washington and discuss this matter at the highest Defense levels.

"I showed it first to Admirals Husband and Enger, and to Foster Lalor, and they all liked the third alternative. Then we discussed it with Mr. Sheridan's Chief for Southeast Asia construction, BRIG GEN Charles C. Noble. While BRIG GEN Raymond and I were explaining the options to BRIG GEN Noble, and what we would need from Defense, Ed Sheridan stuck his head in the door, started listening, stayed for an hour, and said he thought it was the only way to go."

Iselin was working on this critically-important proposal on the weekend of the 25th of February. He was one of the few officers in NAVFAC headquarters that Saturday afternoon in 1967. Another was RADM Enger, the Vice Commander. Both were in the second story "Head House" or command headquarters of NAVFAC by the Potomac. That afternoon, as Iselin recollects it, RADM Enger came over to his office and said "Come on, we have got to go over and see Mr. Bannerman (the Assistant Secretary of the Navy)."

"When we got there, Mr. Bannerman had been on the phone with Mr. Ignatius and said, 'We have been talking about your contract and about what you've told him and he said he's under the opinion that the only way we can really handle this thing is at some level of effort. We just can't go skyrocketing up and down, as you have been experiencing.' "

And so Iselin came back from that meeting, talked a little further with RADM Enger, and told him he would put together a paper that would describe how the OICC could establish some level of effort. He did it over the weekend. "I just put that title on it—level of effort—for lack of anything better. And then Monday, I asked a couple of people to look at it and said, 'Here is the system. Now it's rough. But look at the main ideas.' "

The choosing of the title was not a foregone conclusion, by a long shot. One of Iselin's "Whiz Kids" suggested that the plan might be called "Level of Viable Effort", which would abbreviate into an interesting acronym, LOVE.

"I thought that was a little corny," Iselin recalled. "And others

came up with fancier ideas, but somehow the idea of Level of Effort just seemed to say something.

"And I thought, 'Well, hell, let's keep it'. Besides that, the Secretary had used it; we'll make some money off of that. And that's how it got the name."

By Sunday night, the paper was nearly completed.

"I think I was up most of that night. I remember waking about two in the morning and going down to my desk at home and writing a few basic guidelines on some yellow sheets that I've still got around. Then I worked Monday with Mal Mooney (CDR Malcolm T. Mooney) and we started putting some words and music to this approach."

By the 29th of February, Assistant Secretaries Bannerman and Ignatius had been convinced of the virtues of the plan.

"So, from the Ignatius okay on, we had to try to put this thing into effect. We had to develop it. It was just an idea. We had to put flesh on it, go out to Vietnam again and sell it to the customers and to BRIG GEN Raymond at MACV . . . and we did that by the 29th of March."

In the same way that the identification of the roots of the underfunding problem was evolutionary, so was the full development of the Level of Effort System. In its final, steady-state form, it was a fully integrated construction management system—it was a highly effective system to replace the "imperfect system" which was the source of the underlying problem. Before reviewing the evolution of the system in detail, a review of its basic principles is desirable. In very brief terms, when the decision was made to change to an LOE system in Vietnam, the decision was consciously made to pick a given capability, roughly matched to a known workload to be accomplished in a specified period of time. This capability was purposely established at such a level that work would always be ready, waiting for the capability—rather than the original posture whereby the capability to do virtually anything was developed which frequently had to wait for work to be ready.

Level of Effort starts with two givens, which must be in reasonable balance: workload and funds. In the steady-state situation, the development of the work plan was a joint effort of the Service sponsors, MACV–DC, the OICC and the contractor. It involved the development of specific projects at specific sites, all of which would be fully ready for construction in a specified time frame.

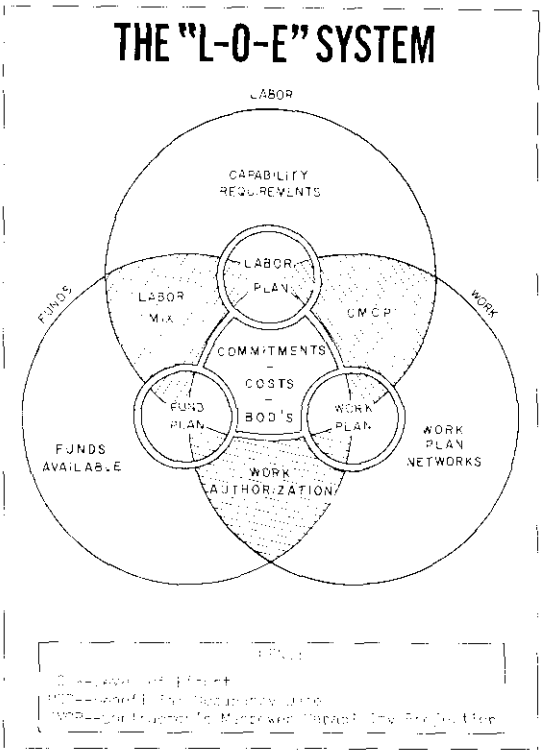

FIGURE 23

From this, the OICC and contractor prepared the fund plan, which is a time-phased plan for the application of funds necessary for all costs associated with the work plan. If this were to develop a shortfall in funds, then an adjustment to the work plan would be required, to match the total funding available. From the Fund Plan would be derived the Labor Plan. The Labor Plan was then developed site by site from the Work Plan and the contractor advised of adjustments which would be necessary, up or down, to accomplish the work and not have excess labor at a site. These interacting plans were the foundation for the LOE system.

As the system evolved, special emphasis was necessary on particular aspects of the operation. By the time the system started to operate; the data processing installation of RMK–BRJ was functioning, and this permitted rapid and accurate cost distribution records. This was a vital part of the system.

In the early stages, special attention was necessary to cash flow, since this was the controlling factor in the entire system. With a

full inventory of equipment, and assuming limited new material procurement, future cash flow could be focused primarily on labor. A special program to bring "out of pocket" expense under intense management was initiated.

The combined result of intense management of cash flow, workload, and labor was a stable program which permitted the contractor to achieve an unusually high level of productivity. At the same time, it brought all parties to the construction management problem to a much greater degree of involvement and understanding of the total process. To the reader, the system appears as fundamentally simple. It is. The problem in 1966 was to create the system and apply it to the ongoing, still urgent program in an atmosphere of discontent and suspicion. The Task Force pursued the development and implementation of the LOE system, while the OICC staff focused its attention primarily on getting the vital work done. In time, the LOE system became a principal management system of the OICC and the Iselin group merged into the ongoing OICC organization.

A review of the evolution of LOE, as recounted by CAPT Iselin, is most revealing of the problems involved in this period.

With the Pentagon "okay" on his basic Level of Effort concept, Iselin returned to Vietnam in March of 1967, to explain it out there, to develop it into a definitive operating program, and to sell not only the concept, but also the related controls to the contractor, to the personnel of the Army, Navy, and Air Force in Vietnam, to MACV's Director of Construction and even to the OICC personnel themselves—all of whose full cooperation was needed to make the plan really work well.

On Iselin's return to Vietnam, he renamed his task force the "Management Advisory Group", attached it to Deputy Commander of NAVFAC's Pacific Division for Southeast Asia (DEPSEA), and took the unlikely Code designation of 00–M, or "00M", as his team members were wont to call it. That "shock troop" consisted of the same nucleus of officers Iselin had taken with him a month before, with a few judiciously added, the best young Navy brains he could find. In addition to Forehand, Olson, Bottorff, Birnbaum, Dickman and Sutley, Iselin brought Commanders Malcolm T. Mooney, James Borberg, and Charles Merica; Lieutenant Commanders John J. Shanley, Thomas M. Emsley, Donald L. Connor and David C. de Vicq; and from the Supply Corps, LT

David Haver. Also joining the group on a volunteer basis was a top-flight former assistant at the White House, and close associate of Iselin, civilian Dave Palmer.

One of the most important steps Iselin had to make as he launched the Level of Effort program was to keep BRIG GEN Raymond, the Director of Construction in Vietnam, fully informed of all his plans. Raymond's attitude could make or break the fledgling effort in those first few weeks. Raymond, whose construction experience spanned three wars, liked what he saw and gave his full support to the new concept.

Iselin recalled: "I told General Raymond that we needed to get three teams to a meeting, one from each Service, to work out the details of what projects we were going to put under the Level of Effort system for construction by the contractor, and what projects we were going to have to give to the troops. He agreed to order the teams to work. He called a meeting for the next day of all interested parties, and had me explain the proposal to our customers. To say that they were skeptical and reluctant would be an understatement. But when the hard facts were laid out, and the alternates explained, they agreed to put their best talent on the work allocation teams.

"We worked in detail with the designated representatives of our customers for every waking hour of the next three days. Every member of my Management Advisory Group was totally involved in this single massive exercise. Paul Forehand coordinated the entire package. He worked with Walt Douglas, Gil Woerner, and Lyle Jones in grinding out new master lists of "Go" projects, and auxiliary lists of "Transfer to Troop" projects. Dave Bottorff and Phil Birnbaum worked with RMK–BRJ's task force to price out the new program, site by site, and project by project, shifting all costs to the out-of-pocket basis, which reflected the large amounts of material and equipment that we had already paid for, even though we hadn't allocated their costs to end projects.

"After three days we tallied the whole thing up and found that our original guesses were off by about $30 million. But we had a good program, one that RMK–BRJ could move out and build, and one that the Services could live with. We hated to recycle it again, so we looked for alternate ways of making up that potential $30 million shortfall in cash."

Iselin had already participated in the decision to cut the labor

force from 37,000 to 15,000 and he knew that RMK–BRJ wouldn't need as much construction equipment for a labor level of 15,000 as they had for 37,000; and at the same time, under his other hat as Comptroller of NAVFAC, he remembered that NAVFAC was about to order more construction equipment for the latest Seabee battalions that were heading into Vietnam. He saw where he could "kill two birds with one stone." Get equipment for the Seabees faster, and get cash for the contract effort as well. He thought maybe $20 million worth. He arranged for CDR (later Captain) Richard E. Anderson (who had earlier commanded NMCB–9) and Fred Carter, a NAVFAC civilian, to come to Vietnam and see what could be done. This effort eventually netted $12 million, and was done under another of the jawbreaking gobbledegook names in the administrative machinery: "Intra Departmental Reimbursable Transfers". Thus, the building capabilities of the Seabees were strengthened while more money was secured to finish off the remainder of the contractor program.

"We also had some materials in very long supply that could be used by troop construction and maintenance forces, instead of buying similar items on new Stateside orders. We thought maybe $10–$15 million could be gained that way.

"Then we had some minor actions also working—some potential jobs from AID (Agency for International Development) and from the repair and maintenance officers of the three Services.

"All in all, we thought that we could swing the new program just the way it was restructured, given favorable support on these 'sales' packages, and full cooperation of the customers in moving their design criteria to us rapidly.

"So we took this total revised program back to General Raymond on March 23rd, and obtained his approval in principle. He scheduled another meeting of all the Service representatives for two days later, March 25th, to have us present it to them."

In the meantime, the day after the first meeting with BRIG GEN Raymond and his staff, Iselin met with the leaders of RMK–BRJ and obtained substantial agreement on the plan. There were also intense sessions with the OICC Directors of Construction, and RMK–BRJ's site managers, because many of their work procedures were going to be changed, and their understanding and eventual cooperation was vital.

New forms and procedures were being evolved and put into effect in the field and in RMK-BRJ's main office in Saigon, setting up the basic system flow and controls for the Level of Effort, even before Iselin returned to BRIG GEN Raymond's conference room in the Old MACV offices in Cholon, to present his restructured program to the still-skeptical customers.

Iselin related: "We first introduced the thing that really made this concept go, which was the workload plan. This showed the customer what work he was going to get done, how long it would take us, when we could start new work for him, and when he had to have his decisions to us.

"What we had really done was to make a capability envelope to put the work load in. Then we would say, 'We can handle this much work load. How much do we have?' And, upon analysis, it turned out that we had a certain amount of ready-to-go work load—firm, fixed work that we could and did schedule. Then there were some further projects that were in final design, and we would add them to the schedule. Beyond that, nothing got into the work schedule until it could be brought to the stage where the contractor would know just what he was supposed to build. Getting the projects ready was the job of the OICC programming and design people, and the customer's representatives.

"The whole thing was a flow system. . . . The specific Level of Effort that was selected or dictated provided broad guidance as to 'how much' and 'how fast' we were to provide construction. Then we could develop the three inter-related plans that determine the optimum mix for funds, work and labor.

"We presented our proposed restructure to the Service representatives in that second meeting, on March 25. There were a lot of questions asked—incisive, critical, suspicious—but we must have had pretty good answers for them, because when General Raymond went around the table near the end of the session, each Service said that they would go along with it.

"The General also made the comment that this was the best meeting that had been held in his tenure in Vietnam, and he would like to do it every two weeks. And we did.

"We also came up with what we called the 'Workload Meeting.' It took us three days to complete the first one, but when it was over everyone involved knew just where his work stood and just what

projects the contractor would actually be working on during the next three months.

"There were many eyes opened during the process of that meeting. Customers began to see the projects from the contractor's point of view. The site managers of RMK–BRJ learned some of the real estate problems of the customers, and why priorities were set up in the order that they were. Some suggestions went back and forth that resulted in breaking bottlenecks. Design people presented specific problems that the customer representatives could take back to their offices and try to clear up. Material substitutions were quickly agreed to, when it was found that a project could start—and finish—a month earlier. Potential soft spots in the contractor's labor mix were identified early, and either new work would be accelerated to use the labor, or changes in the work force could be achieved on a planned basis.

"This Workload Meeting became a regular monthly procedure, and was one of the major contributing factors in our successful prosecution of the construction effort in Vietnam."

To complement the monthly Workload Meetings, which were largely oriented to the contractor's status, Iselin used his periodic briefings of BRIG GEN Raymond and his staff, to present the picture of the *future* construction program as the OICC saw it, to point out potential soft spots, to show how well or poorly the customers were doing in identifying new projects, in getting design criteria to the OICC, and in assigning funds to the OICC.

"We started to draw each customer a picture. We would show him what was happening to his program and everything was marked in black and white. He could hang his hat on it, and he could plan on it. The General would sit back there, during those meetings, and put the arm on whoever was falling behind, whether it was the contractor in construction, the OICC in design or programming, or the Army, Navy, or Air Force customer representatives in defining projects and getting criteria to the OICC."

Iselin analyzed the performance of the contractor in completing every project against the schedule that had been agreed to, and reported those results to all hands at these monthly meetings. Perhaps a central achievement of this procedure was gaining from the customers the assurance that each would make certain his "Criteria" or requirements of the particular building involved would

be set, frozen, by a certain date and not altered, except in extreme emergency. He also tightened up on the actual construction schedule.

"The three month rule", Iselin said, "was that nobody changes our schedule for the next three months of construction except General Raymond (or later, his successor as MACV Director of Construction).

"And that meant no matter how many projects a customer brought in, unless he could convince the General that he should displace other projects and thereby reduce efficiency on a large number of projects, it wasn't going to elbow its way in there; instead, it would be added on at the end of the three month schedule, in accordance with its priority.

"I can remember only one or two times in all the months I was there that this override authority was used.

"Pretty soon the customers got to like it because they realized that once they got into the pattern and got scheduled, they could count on getting their projects completed. And others couldn't elbow them out. It began to catch on. The sooner they gave us criteria, the faster we got their projects designed, the sooner they got into the schedule, and all of a sudden they were in the three month schedule and nobody could touch them.

"So they quit beating on us. And they were working three, four, five, six months out in future, knowing full well that if they did their job right they would have these projects a helluva lot faster than they could ever get them under any other conditions."

As the "Year of the Offensive" (GEN Westmoreland) developed, it seemed as if the contractor was nearing the end of his large-scale, sophisticated construction, and that the military engineers, Seabees, Army Engineers, Marines and Air Force RED HORSE Squadrons, were coming into their own. Even though the tempo of the fighting grew more intense, it seemed that the contractor would soon finish the bulk of the heaviest kind of construction, and that the military engineers could fit in well with the somewhat less complex needs of the troops in the field, as distinguished from those back at the large logistics and operational bases.

Said Iselin: "We did target it (the Level of Effort) at approximately $15 million a month, when we started. We actually came out at $13 million a month. . . . We had decided to come on down as quickly as we could with our labor force, from 37,000 to 15,000,

but still producing all during this time. We had at that time only $170 million cash available and promised, enough to operate about one year at the $13–$15 million monthly level. We had a further promise from the Assistant Secretary of Defense that we would get another $20 million and that was all we could count on. So, that was what we started with.

"Now, as later events proved out, the contract was extended and extended and extended, as more projects with more money kept coming in. Probably $600 million came in after that. And why? Because the system was working so well. We were producing a lot cheaper. We were getting the payback . . . in 1968, 1969, 70 and 71 from the investment that was plowed into this job back in the 1965 and 66 time frame. And we were doing it efficiently.

"Once we got through about, I'd say, a month and a half of this intense conversion effort in April and May of 1967, when we were compiling our first returns on how well the Level of Effort system had started to work, we were really tickled to see that all the things that we had said *might* happen to help us were, in fact, starting to happen. The customers had really jumped in and gotten project definition and design criteria to us faster than we had thought they would. Our weather turned a little better—that helped us. The enemy laid off for a little while. Some of the alternate funding that we thought we might be able to get, we did get. The sale of some of the contractor's construction equipment to the engineering troops proceeded without serious hitch.

"It started to work. As a result of that, we had what we called an LOE dividend.

"In other words, we were able to say, 'That job isn't going to cost you quite as much as we thought it was going to'. And therefore, the money saved is available for something else. And, of course, they (the customers) had lists that wouldn't stop, . . . We enjoyed that and they appreciated it. And they got to believe in us and placed their trust in the system.

"It was no magic chariot. It was a total system. The LOE was the pazzazz. It was the front line thing. It was the item that broke the back of the difficulties. But it could not have worked on a continuing basis unless we did all the other things that we're talking about.

"We knew we had to keep it going well. But we had over 900

employees on the OICC staff alone, with considerable personnel turnover, and each of the 100 officers changed every year, with the exception of the Admiral. (The Admirals got 18 months.) So here was need for continual training. We even published a course on it. Bob Sutley prepared it, and he named it something like: 'What Makes the OICC Run?'. We gave it to every new officer and key civilian who reported into the place. So we were working both externally and internally at the same time."

As the contractor worked with the LOE system, his efficiency improved in many areas, including more accurate forecasting and estimating. The customers got their projects on time, close to the cost estimates, and could rely on the OICC's projections for their entire construction program.

Words of praise from Perkins, for Iselin: "What he did was, he quantified the problem and got it into a manner that could be presented to all the customers, all our staff, all the OICC staff, and accepted by them. Here was a guy who had the power delegated to him by the Admiral (Husband), and he was very bright and handled himself very well, and he had not only the innate intelligence, but he also had the tact and could get it over without alienating anyone.

"He had a hard job. I could understand a man having the mental capacity to do this, I can understand his having the drive and enthusiasm to do it. But very seldom do you find the combination where this fellow had all this and still can get along with his fellowman, especially when he's stepping on their toes. He did it, and well. . . . And he had to do the selling, too."

Besides working incredibly long hours, and generating galaxies of new ideas, Iselin and his fellow officers also showed that their sense of humor hadn't forsaken them. They put on a series of satiric musical comedies under the aegis of their F.A.R.T.S. players (a strenuous acronym which stands for "Fun and Ridicule Thespian Society"), which poked fun at everyone in the Vietnam building business, not excluding the then OICC and DEPSEA, RADM Spencer R. Smith.

RADM Smith, too, could appreciate this, as he recalled: "About once a quarter, we used to have these skits, ribbing the characteristics of the people and the situations we were living with in Vietnam, while building facilities for all the Services."

The LOE system continued as the principal construction management tool in Vietnam through the remaining years—years which saw further fluctuations in workload and in the troop-contractor mix. It was a vital tool during the phase out of the troop engineer units and later during the final closeout of RMK–BRJ.

CHAPTER NINETEEN

Military Engineers in High Gear

In 1967, and into 1968, military engineers came on strong. By February of 1968, there were 12 battalions of Seabees serving in Vietnam at one time, the largest number during the entire Southeast Asia war. All of the Seabee battalions had their headquarters, and most of their people, in the northernmost military area, the I Corps, with nearly half of the battalions deployed at the northern part of I Corps, close to the North Vietnamese frontier.

On August 31st, RADM James V. Bartlett arrived in Da Nang to be Seabee boss for Vietnam. His new job was to take over command of the Third Naval Construction Brigade from CAPT A. R. "Mike" Marschall.

Official recognition of the growing importance of Seabees in Vietnam was the assignment of a two-star Admiral, Bartlett, to the job. For the first time there would be a CEC Rear Admiral with the exclusive job of commanding the Seabees in Vietnam. ADM Smith would still be the Officer in Charge of Construction (OICC) at Saigon and have that longest short title, DEPSEA.

Headquarters of the Third Naval Construction Brigade was next to the 30th Naval Construction Regiment in Da Nang, in the sprawling Seabee camp in the middle of a vast equipment and supply dump, at Red Beach.

The 32nd Naval Construction Regiment to command the Seabee battalions deployed in the northern part of I Corps, was established at Gia Le, in the vicinity of Hue, on 1 August 1967 under the interim command of CDR R. L. Foley who was relieved by CAPT J. M. Hill on 26 August.

The fact that RADM Bartlett took up his headquarters in the Red Beach Seabee camp was indicative of a changing emphasis in the construction picture. Previously, RADM P. E. Seufer, wearing the

triple "hats" of OICC, DEPSEA and Seabee Commander in Saigon, had stayed closer to the contractors' headquarters. Now the military engineers were going to have a larger role.

When Seufer had left in July of 1967, CAPT Marschall, then Commander of the 30th Naval Construction Regiment in Da Nang, had taken on this former "hat" of Seufer's as well as his own.

Now, on August 31st, 1967, as ADM Bartlett came in to take overall command of the Third Brigade, and as the 32nd Naval Construction Regiment was established near Hue, a brigade branch office was set up in Saigon to be liaison for MACV headquarters and the OICC/contractor consortium.

In charge of this vital—and touchy—high-level job was CAPT George A. Goetzke. Goetzke had been involved in a series of difficult and diplomatic jobs during his long history as a Navy CEC officer.

Up to mid-1965, there had been no U.S. Army engineer troops in Vietnam. Initially, the contractor was much more quickly available for building than engineer troops. There was a large deficit in military troops to do the job. One main reason was that the top-level decision was made not to mobilize our military reserves. So the build-up was slower, and the full force of our military engineer capability was not realized until 1968 and 1969.

We have covered the first deployments of Army engineer troops as the first Army troops landed in Vung Tau, Bien Hoa, Cam Ranh Bay and Qui Nhon in 1965.

The first brigade organization, the 18th Engineer Brigade, had been set up in Saigon in September of 1965. At this time, the engineer force was composed of two group headquarters, six battalions and nine separate companies. Commanding was BRIG GEN Robert L. Ploger.

On September 16th, 1965 the headquarters of the 18th Engineer Brigade (minus the main body, which did not arrive until September 21st) became operational and took command of all Army engineers not organic parts of Army divisions.

One week later the USARV (U.S. Army, Vietnam) assigned the following missions to the Brigade:

"a. Provide operational planning and supervision of USARV construction and related tasks as may be directed by this headquarters.

b. Exercise command and operational control of engineer units assigned to United States Army, Vietnam.

c. Provide for physical security of personnel, equipment, facilities and construction of all units assigned to your (BRIG GEN Ploger's) command."

The brigade was painfully aware of two overall problems: 1) there were too few construction materials available to the units in the field, and, 2) repair parts for engineer equipment were almost non-existent. In fact, most of the units were still operating from supplies (theoretically for 15 days) which they had brought from the U.S.

In partial response to the repair parts problem, a "Red Ball" system (the nickname came from the vast "Red Ball Express" supply job tackled in France in 1944 in World War II to keep up with our advancing armored columns) was started in December of 1965, but the real holdup, as we have recorded earlier, was in easing the glut around the deep water ports.

On January 1st, 1966, the 20th and 39th Engineer Battalions, along with the 572nd Light Equipment Company, landed at Cam Ranh Bay. They represented the last bit of available effort, pro tem, to reinforce Army Engineer strength in Vietnam. From January 2nd until mid-May, only two companies were added to the strength of the 18th Brigade.

In the Spring of 1966, a USARV Engineer Section was formed from the Brigade to carry out Army base planning. The Commanding General of the 18th Brigade, BRIG GEN Ploger, was designated USARV Engineer. He was also assigned command of non-divisional engineers in the II Corps area.

The 20th Engineer Brigade, commanded by BRIG GEN Curtis W. Chapman, arrived in August of 1967. BRIG GEN Chapman assumed command of the three Army Engineer groups and their 13 battalions in the III and IV Corps areas.

By mid-1968, 38 Army Engineer battalions, 48 separate companies and numerous teams and detachments had been deployed. At this peak, Army Engineer strength in the RVN was about 40,000 officers and men, including members of combat engineer units of the seven Army divisions and six separate brigades and regiments.

At Qui Nhon, where the Army's 937th Construction Group had their headquarters, large parts of that port improvement project were carried out by the army.

Qui Nhon was a major quarry area for the army. More than 8,000 cubic yards a day of laterite and granite was excavated here.

Engineers from the 937th Group built a 13-mile access road into An Khe, on the way to Pleiku from Qui Nhon. And detachments kept the main road, Route 19, open with spot repairs and Bailey bridges in the wake of Viet Cong raids.

In the gigantic logistic settlements where Army bases were being built by the contractor just north of Saigon, Army Engineers also worked close to the contractor—although here in smaller numbers than at Cam Ranh or Qui Nhon.

There was also the sizeable Army detachment at the airfield on the coast at Phan Rang, where the Army and the contractor worked together to build an Air Force installation.

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By late 1967 there were also five Air Force "squadrons" of RED HORSE engineers in such building areas as Phan Rang, Qui Nhon, Tuy Hoa and in many of the newly expanded and improved airfields of Thailand. Prominent among these was the airfield built by the Seabees at Nakhon Phanom, almost exactly on the border of Thailand with Laos, and on the same latitude as the North Vietnamese terminal city of Dong Hoi. Dong Hoi was frequently bombed by our land-based and carrier-based fighter bombers, because it was the southernmost of the large bases feeding the Ho Chi Minh Trail into South Vietnam.

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The Seabee battalions, details and Teams from those battalions, again in 1967 as in previous years, distinguished themselves with remarkable "Can Do" accomplishment. But in this year, there were so many accomplishments that the historian must pick out the most outstanding of those feats to report.

The Seabee work of constructing cantonments, storage and service areas around Da Nang went on at a greatly increased rate

in 1967. As the Seabees took over much of the building which had been done by the contractor, the newest—and most dangerous—work was done farther north, from Hue-Phu Bai up to the northernmost outposts of South Vietnam: Gio Linh, Khe Sanh, Lang Vei, Con Thien, Quang Tri. Here, details from the battalions were exposed to heavy artillery and rocket barrages. At Khe Sanh, Con Thien or Gio Linh, cones of heavy artillery fire from the DMZ, where North Vietnamese were present in great force, could easily cover the American troops and their Seabee building compatriots.

The Viet Cong had become formidable enough, with their Chinese-made weapons brought in by the North Vietnamese Army. But here, at the border where the enemy was almost totally NVA troops, heavy weapons were plentifully available, like 120mm (4.8 inch) mortars and 122mm rockets. Plus 126mm (5 inch) artillery and even 152mm (6 inch) big guns.

Dong Ha, 12 miles from the border, was the Advance Command Post of the Third Marine Division, whose troops manned this area. One of the first battalions to locate in this northernmost part of South Vietnam was NMCB–11.

The battalion, under the command of CDR W. L. Wilson, was deployed in April of 1967. Their biggest job was to enlarge the Dong Ha base. They relocated buildings, and constructed many new barracks and working and service areas, including sizeable blocks of "reefer" or cold storage warehouses.

Marine units from farther south in the Hue area were being juggled so that the forward command of the Third Marine Division could be greatly reinforced, and GEN Walt, Marine Commander in I Corps, had managed to secure the comittment of nine battalions of Army troops of the 25th Infantry Division and the 196th Infantry Brigade to the I Corps. The nine battalions could be moved into the Chu Lai-Duc Tho area south of Da Nang, releasing two battalions of the First Marine Division for service in the northern area.

So there was a pressing need for extra quarters and facilities for the new troops moving into the vicinity of Dong Ha.

The men of NMCB–11 learned to live under an increasing volume of mortar and artillery fire being levelled at Dong Ha, as the Marines worked to expand their control of the area.

And as always with Seabees, they also managed to help the local

people. At a nearby refugee village called Cam Lo, they turned the Cam Lo River into a new course by building an earth dam and clearing a former river bottom for the construction of the village. Even in such a tactically-hot area as this northernmost part of South Vietnam, Seabees were fulfilling one of their most important functions in the modern kind of war: Civic Action.

While the main body of NMCB–11 achieved these admirable works in the Dong Ha vicinity—and ducked mortars and occasional rocket assaults—details from the battalion operated in even more dangerous areas, still closer to NVA enemy. These details from NMCB–11 went to a string of embattled bases immediately south of the DMZ and the "Barrier", a belt of terrain 600 yards wide where all vegetation was being flattened to prevent infiltration by NVA who kept slipping through the DMZ.

One detail from NMCB–11 went to Gio Linh at the easternmost edge of the Barrier. Gio Linh was a sandbagged, dug-in, heavily wired and mined outpost within easy sight of the North Vietnamese guards and their red flag on the Ben Hai River.

Finishing that Barrier, partly the work of Marine engineers and partly the Seabees, was one of the many dangerous jobs which the details of NMCB–11 were assigned to do. Since *all* the outposts along the Barrier were being assigned larger patrol forces, there was much building work for Seabees to do—most of it dreary, tiring and dangerous work of digging deep for protection against shelling, mortars and rocketing, and filling and placing heavy sandbag protective bunkers.

Most of the details from NMCB–11 were much farther west along that belt of patrols—at Khe Sanh, at the extreme northwest corner of South Vietnam on the border of Laos, and Lang Vei, five miles closer than Laos.

Khe Sanh airfield had been a primitive French airstrip. It had earlier been rebuilt by a heroic Seabee detail.

But a prolonged attack by NVA artillery, mortars and rockets, from August of 1966 onward into '67, had exposed that Khe Sanh strip to a very heavy load—much aerial resupply, and much of that under fire, so that takeoffs and landings tended to be carried out at frantic speed. Thus, the handsome resurfacing of the Khe Sanh strip with smooth aluminum AM–2 matting was developing weak spots, frequent breakthroughs and cave-ins. There was much work to be done there. And a detachment of CBMU 301 (Construction Battalion

Maintenance Unit 301), reactivated in the spring of 1967, was the outfit to do it. More later on this.

Troops of the Third Marine Division had taken over the operation at Khe Sanh, making it into a Marine base. They were facing NVA who looked "down their throats" from three sizeable hulls: 861, and 881 North and South. The military style names mean the height of the three craggy promontories, one 861 and the other two exactly 881 meters high. The three mountains, each about half a mile high, commanded the Khe Sanh Base from the North.

When Marines took over at Khe Sanh and the Special Forces and CIDG garrisons moved out, the CIDG were moved to a frontier base at Lang Vei. The base at Lang Vei was to the west directly astride the main road, Route 9, halfway (five miles) between Khe Sanh and the Laotian border. It had already been "hardened" by a detachment from NMCB–7, headquartered at Phu Bai.

As the building work continued at Lang Vei, a detail from NMCB–11 did it. And all of the hardening of that base was to be useful in the coming months, as the men lived through not only mortars and artillery, but also assaults by Russian-made amphibious tanks. Two of these the CIDG garrison managed to capture.

NMCB–4, although stationed at Da Nang, had a detail at Con Thien to build a Special Forces camp from scratch. Like the regular garrison, the detail from Four at Con Thien suffered a murderous ordeal of shelling, mortaring and rocketing. In one 24-hour period, Con Thien was hit with 1,233 artillery shells and mortar rounds.

But in typical Seabee fashion, the detail did their job, which was to build the bunker-style camp and to drill a water well with exceptional rapidity considering the military impediments. By the time the detail of NMCB–4 reached Con Thien, the Communist assault was in full force, and the American public was familiar with artillery assault by NVA. Nights when 500 to 1,000 shells would impact were not uncommon. But Seabee casualties, considering the large numbers of Marines killed and wounded, were small: 14 wounded, no killed.

Other Seabee units that were active in this hazardous northern area were: Construction Battalion Maintenance Unit (CBMU) 301, under LT CDR Henry A. Holmes, with two sizeable details, to very dangerous duty at Khe Sanh and Cua Viet. This CBMU was assigned to NSA Da Nang for operational control. Also, details from NMCBs 10, 58 and 5.

This Seabee Maintenance Unit, the CBMU, had been established first in World War II by the founding Seabee Chief, the "King Bee", ADM Ben Moreell. The theory: there should be specialized units with the function of providing maintenance. At the peak of World War II activity, there were 136 CBMUs deployed in the Atlantic and Pacific theatres of operations. When war ended, only a few survived, and those were closed down during the late 1940s. When the Korean War occurred, CBMU-1 was activated, and it served with great distinction with the First Marine Air Wing. It was redesignated CBMU-101, and then it remained on active duty until 1956.

In 1965, as all of the services and the contractor consortium were swept up in the great wave of expansion, plans were set afoot to recreate two CBMUs: 301 and 302. They were activated on March 31st at the Port Hueneme, California Naval Construction Battalion Center.

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When the detail from CBMU-301 arrived at Khe Sanh, the dug-in outpost athwart the northernmost of the Ho Chi Minh Trails, they were in for only a few days of relative peace and quiet (not much artillery). The Tet Offensive erupted at the tail end of January, 1968.

CBMU-302 was assigned to the Commander of Naval Support Activity, Saigon, and headquartered at Cam Ranh Bay. Details from CBMU-302 were assigned to Naval Support Activity bases through the three southernmost Corps.

The CBMU-301 detail in the Khe Sanh hotspot was accompanied by details from NMCBs 10 and 53. They, like that from NMCB-11, acted as a "fire brigade", rushing out to repair the AM-2 runway sections so that circling resupply planes, C-123s or C-130s, could come in to deliver their much-needed replenishment of ammunition and food. CBMU-301 took its share of casualties at Khe Sanh: two killed in action—BU1 C. O. Spillman, and SWF2 Edward O. Adams—and seven wounded. NMCB-11 lost one killed, EOCS Donald J. Barnes, and nine wounded in action. NMCB-11's casualties were still heavier at Dong Ha: four killed in action—BUCN

Anthony J. Grasso, BU2 Jerry L. Newman, BUCN J. D. Patterson and BUCN Richard J. Wager - and 42 wounded in action.

NMCB–5 had five men killed in action in the vicinity of Dong Ha from December 1967 until March 1968.

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At Cua Viet, at the eastern end of the frontier with North Vietnam, on the South China Sea, a small but vital supply base had been fashioned.

We have seen the beginning of that coastal base in 1966 when the contractor, RMK–BRJ, brought a succession of dredges to scoop out a channel from the sea through the long bay mouth bar to the mouth of the Cua Viet River.

After violent, long-continuing opposition by NVA and Viet Cong, and incredible difficulties with the winter monsoon, Marines pushed the enemy back so that the periphery at Cua Viet was larger (therefore, safer from artillery, rockets and mortars). And at the same time, the contractor had managed to finish the dredging projects, through the bay mouth bar and around the Cua Viet vicinity.

Ashore, Marine engineers—and more lately the detail from CBMU–301—were expanding the Cua Viet camp, building roads and cantonments, ramps and depot areas so that cargo could be brought in for the embattled base at Dong Ha, and the hotly-engaged outposts on the border at Con Thien and Gio Linh.

The Marine combat engineers came in large numbers to support their rifle companies in action. By June of 1966, five engineer battalions had been deployed: the First, Third, Seventh, Ninth and Eleventh.

One of the major Marine engineer accomplishments was by the Seventh Engineers—the building of a 1,478-foot floating bridge over the Da Nang River. It was the largest of that type built anywhere, up to that time. It permitted two-way traffic between Da Nang East and the main Da Nang area.

The Ninth Engineer Battalion, activated at Camp Pendleton,

California, in December of 1965, reached Chu Lai June 7th, 1966. It was the combat support unit for the First Marine Division. It also worked with the Korean Marine Brigade in the Binh Son area.

The last U.S. Marine Corps Engineer Battalion to be activated for Vietnam was the 11th. It was assigned as further support for the Third Marine Division and reached embattled Dong Ha on December 1st, 1966. It labored under fire and despite heavy winter monsoon rains to build roads, dig wells, install electric generators, and build emergency defensive positions.

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For an expression of the "Can Do" spirit of Seabees in the most primitive circumstances and against determined enemy opposition, the construction of Quang Tri airfield in this period was outstanding.

The urgent move to build Quang Tri airfield where there had been nothing before, came about because Dong Ha was being subjected to a harrowing, steady bombardment. The plan was to construct a new airstrip ten miles farther south (away from the NVA big guns) along old French Highway No. 1, and cut the danger of such heavy bombardment by a large measure.

In September, 1967, the first Seabees reached the building site at Quang Tri. The airfield area was only open meadows. The plan to build this airfield had been kept in close secrecy. Until the day of arrival, most of the troops knew only that they were being deployed to "Site X".

In this top-priority operation near the city of Quang Tri, elements of nine Seabee battalions were brought in. They were led by CDR Richard L. Foley, CO of NMCB–3. LCDR William N. Ahrens was his assistant and field superintendent. Ahrens was also Executive Officer of NMCB–121.

Elements were at work on the site on September 15th, and the job of building the 3,500 foot runway was finished in 38 days, nine days earlier than the scheduled completion date. This despite

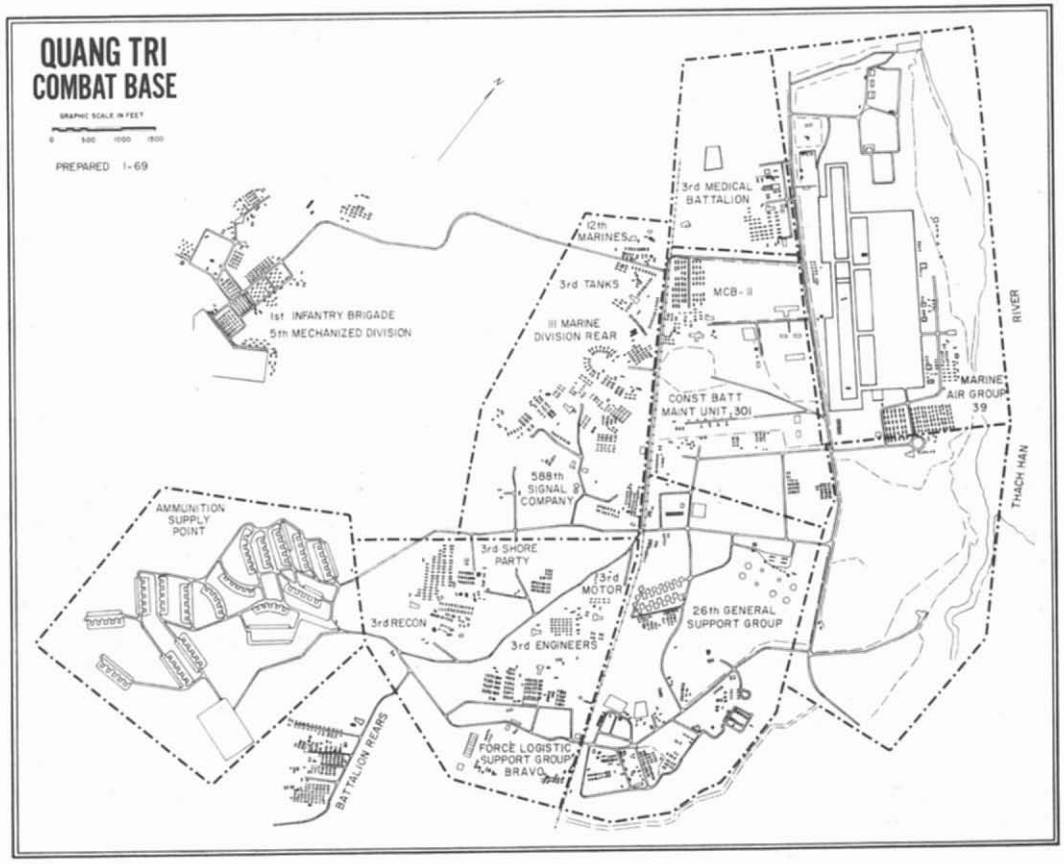
QUANG TRI
COMBAT BASE
GRAPHIC SCALE IN FEET
0 500 1000 1500
PREPARED 1-69
3rd MEDICAL BATTALION
12th MARINES
3rd TANKS
MCB-8
1st INFANTRY BRIGADE
5th MECHANIZED DIVISION
III MARINE DIVISION REAR
CONST BATT MAINT UNIT 301
MARINE AIR GROUP 39
588th SIGNAL COMPANY
AMMUNITION SUPPLY POINT
3rd SHORE PARTY
3rd MOTOR T
3rd RECON
3rd ENGINEERS
26th GENERAL SUPPORT GROUP
FORCE LOGISTIC SUPPORT GROUP BRAVO
BATTALION REARS
THACH HAN RIVER

FIGURE 24

the usual impediments like NVA and VC action and some customary impediments more aggravated than usual. One of these was the fact that 11,000 graves were found in the work area. Another was an early onset of the northeast rainy monsoon.

Ahrens' diary catches the hour-by-hour trials and tribulations of the Seabee commander on a top-priority project. It also reflects the increasingly large emphasis upon the military engineer in the overall building operation, and the increasing emphasis on work of Seabees and Army Engineers in planning of the high MACV command. The diary tells of many visits per week by top-level generals and admirals—all vitally concerned with the urgent completion of this new base. Mainly, the account is a down-to-earth, detailed account of the night-and-day struggle of Seabees under dreadfully primitive conditions to build the project on time. Below are excerpts from the Ahrens diary.

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The diary reports, as of the Seabee start:

"*September 17th.*

Rain continuing unabated since 1800 on 15 September. Steady downpour, not typical monsoon driving rain. New 15 × 32 tent saturated and nearly all seams leaking. Continuing fairly quiet nights with only Marine firing and illumination. Some sniper fire taken on 17th from across river.

On Sunday, 17 September, finished 90 percent of temporary Helo pad by 1000. First Helos landed on PSP pad with Commodore Hill (CAPT J. M. Hill, Commander of the 32nd Naval Construction Regiment at Hue-Phu Bai), COL Dick, CO Fourth Marines, and others. Also arrived from MACV, Quang Tri, were MAJ Joe Pate (Army), COL Smith (Army) and Nev Wilson (Royal Australian Army). Last three primarily to assist in removal of over 11,000 graves from site.

Met Dai Vy (Dai Vy means 'captain' in Vietnamese), District Chief of My Lin District. Second company of Marines supposed to

arrive 18 September. Need them desperately to expand perimeter. Single concertina (barbed wire) laid approximately 1500 feet by dark. Cut in 15 places by unknown persons already.

Hundreds of Viets have been throughout camp and site all day on grave removal. Security a problem. Must admire them for their rapid reaction and willingness. Would take years to move these graves in States. They have been given only seven days. Even in driving rains they dig them. Use everything from sandbags, C-rat (combat ration) boxes, ammo boxes to even concrete caskets. Saw one casket today that took six men to lift with shoulder poles.

2,500 feet of airstrip cleared. (Note: *two days* after the start!) Main drainage located, 2nd ditch cut. Need 36-inch culvert badly to bridge for road. Many trucks stuck in mud. Dozers and one Rough Terrain Fork working tremendously. Hitsman on Single Fork (Builder Third Class Hitsman) remains hero of the early phases of Site X. Works steadily without complaint or faltering. Never wastes a motion. Amazing young man.

Convoy with much material and more Seabees arrived approximately 1600 from Dong Ha.

Convoy also came through from NMCB–121 with 60 bundles of PSP and other materials (121 had its base at Hue-Phu Bai). Received Ghost Battalion flag made at Camp Campbell: Skull and Crossbones! Most dependable supply thus far is from Phu Bai. Much trouble with (blown-out) bridges from Dong Ha.

Galley located and laid out. Graves in way must be out by 1200 tomorrow (18th). Galley grading will start then, forming of deck to follow. Hooches (barracks) progressing slowly. Five decks in various stages of completion. Huts should go up 18th. All hands continue in fairly good spirits despite being soaked day and night and no chance to dry out. Hope to have 16 × 32 changing tents and C-rat eating tents up tomorrow.

"*18 September.*

Rain has stopped after 72 straight hours. Today a second company of Marines arrived Site X. A-Company, 1–4 Marines (First Battalion, Fourth Marines) to augment B-Company, 1–4.

CAPT Ross of B-Company has done a fine job in these first three days. Finally have been able to expand the perimeter and disperse equipment for the night. 2130 now and MAJ Anderson, XO of

1–4 and new senior Marine at Site X has just informed me that he has received word all of I Corps is to be on 100 percent alert tonight. Advised him that I have told my Seabees mortar or ground attack very likely in first five days at Site X. Tonight is fourth night. They have been well alerted.

CDR Foley will try tonight to prepare convoy for run from Phu Bai tomorrow with vitally needed materials. High water is holding up supply from Dong Ha. C-rats running short, galley construction start to depend on convoy from Phu Bai tomorrow.

"*20 September.*

Two convoys arrived today. One from Phu Bai and one from Dong Ha. Was down to sandbags and wire for work. Much essential material and equipment arrived today.

Visitors today included Admiral Bartlett and Commodore Hill, General Anderson, MAW (Marine Air Wing) 1, General Metzger, COL Dick (Fourth Marines) and many other lesser dignitaries.

Received word today that LT George Moss will replace LT Ron Buntley as horizontal construction officer. 142 men from NMCB–10 Alpha Company will arrive next few days to replace present A-Company from 1, 7, 133 and 3.

Issued first beer and soft drink tonight and the men are beaming. Also, CS1 Hervey set up field range and made first real coffee. Life couldn't be better. A few more days and we should have more huts up to get the men out of their tents and shelter-halves. Been a good day. Washed for second time in rain water running off roof at about 1730.

"22 *September.*

Cement started arriving today in quantity. Also aggregate. Things are looking up, but road to Dong Ha will be out tomorrow so no further supply will be available till Sunday, 24 September. . . .

Things are moving well on the construction: First 2,500 feet of runway nearly to finish grade. We could start soil cementing 24th if we had Pulva-mixers, piping, pump, cement and rollers. Not likely that we'll be able to start before 26th.

Last night Site X took two incoming 105 (105mm artillery)

illumination (flare) cannisters from ARVN unit. (An accident.) Got one as souvenir. Nobody hit. Very fortunate. Enemy action at Site remains nearly negative. Dong Ha catching it.

"23 *September.*

Today General Westmoreland, General Hochmuth (Commander of the Third Marine Division. He died later in 1967 in the crash of his helicopter.) and Commodore Hill visited Site X. Arrived 1400, departed about 1430. Now staffed with myself, Art Shaw and George Moss.

"24 *September.*

Today was second full Sunday at Site X, our 9th day on the project. Visitors today were General Hochmuth, COL Dick of Fourth Marines and Chaplain Topping of 121 (NMCB).

Work moved well today. Started clearing Helo pad and got about 50 percent done. First 1,000 feet (of) runway ready for soil cement. Have everything now except Pulva-mixers and AM-2 matting. Pump and pipe on board. 18 huts nearly complete. Six more decks go in tomorrow. Have 20 more laid out. Ditch cut through to river. Another mortar alert tonight with one person in each hooch. Pretty good day, convoy arrived from Phu Bai with pre-cut galley and pumps.

"25 *September.*

Commodore Hill and CDR Foley arrived back at Site X today. CDR Foley will stay till Thursday the 28th. Runway soil cementing still delayed by lack of Pulva-mixers. Only one on site. Other construction proceeding okay.

Mortar tower delivered by flying crane helicopter today about 1330. Sand storm under props prevented setting in place. Crane arrived late afternoon to erect tomorrow. VC must have spotted the tower coming as they chose tonight to hit us with first mortar attack. Site X took estimated 50–60 rounds, 81mm and 60mm fire, at 2345. Ten Marines wounded, one seriously. No Seabee casualties. Spot report submitted to Third Brigade and 32nd NCR about 0030—26. RADM Bartlett, Commodore Hill and CDR Sutley (a member

of CAPT Iselin's "think tank" LOE group) visited Site X in the afternoon. Was advised by them that I had been selected for temporary promotion to Commander.

Erected mortar tower. Will require two days to make it operate.

Damage to huts this morning after mortar attack showed considerable number of holes and pieces of shrapnel. Very fortunate no one was hurt. One truck had three flat tires. No other serious damages to equipment or buildings. Galley work continuing. Culverts placed in road (main axis).

"*27 September.*

CAPT Wynne and group from COMNAVFORV Base Development visited Site X. (Group was from COMNAVFORV, Commander Naval Forces Vietnam.) Took them on tour of Viet village area to north of runway and Helo area. Runway to 2,500 feet in good shape. Soil cement will start tomorrow. 209 men and 3 officers on site."

As the base began to take obvious shape, and more troops appeared on the scene, the enemy reflected obvious concern: They made their second mortar attack, and caused the first battle casualties to the Ghost Battalion. Ahrens reported in his diary:

"*13 October.*

. . . at 2325, Site X came under second mortar attack. 30 rounds. Hit mostly behind and in front of galley and around two mess cook huts. Two Seabees slightly wounded; Butz, mess cook, and Bruno, general watch. 30 Marines wounded. One hut and one vehicle with slight damage."

* * * * *

A big day in the construction of any airfield was reached on the the 20th of October, the 36th day on site for CDR Ahrens and the Ghost Battalion. That day he could write in his diary:

"36th day on site. Today runway was completed. 3,500' of AM-2 matting and 300' overruns north and south. One-third of taxiway and one-half of parking apron yet to do. 330' of Helo pad matting complete. Soil cemented 100' × 650' section today. 400' × 650' yet to go. Am hoping weather holds. Has been good now for more than a week."

By this time, Ahrens knew that plans for expansion of Quang Tri airfield were growing more ambitious. Now it was evident that when his initial building effort was finished, a much larger installation, on the order of Phu Bai, was envisioned. (Three years later, the base at Quang Tri was going to be the principal staging area for assaults by sizeable South Vietnam forces against the NVA along the Ho Chi Minh Trail in Laos. Those ARVN forces were carried into their assault by American helicopters from this same base.)

On October 23rd, Ahrens suffered his first killed-in-action. The episode happened to NMCB-121, which at this time was working at Phu Bai. (Ahrens was Executive Officer of 121.) Two of his most trusted men and close associates were driving in a jeep west of Phu Bai and that entry follows:

"23 *October*. 39th day on site. Today has been one of those that encompasses joy and grief in one short 24-hour period. This morning at 1155 our long waited first C-130 landed on the runway (60-ton Lockheed turboprop Hercules Air Force transport). Pilot (Wildfang) reported the runway smooth and firm. Said he has been landing on expeditionaries since the days of PSP runway in WW II and this was the smoothest. Two other C-130s followed, also reported it a good runway.

"Tragedy struck today between briefing of General Krulak (Fleet Marine Force Pacific Commander) at 1100 and first C-130 landing at 1155. Chaplain Topping from (NMCB) 121 arrived tonight at 1800 to advise me that LT Rhodes, Chief Dibble and Petty Officer 2nd Class Morvay of NMCB-121 were killed at 1125 today when their jeep hit a mine west of Phu Bai. (LT Joseph R. Rhodes, SWC Gordon J. Dibble, and BUR3 Jon R. Morvay.)

"This is a loss more terrible than words can convey. LT Rhodes was literally like my own brother and was one of the finest officers I've ever known. His potential as a career officer was unlimited. His cheerful, earnest approach to life and his driving enthusiasm for adventure were boundless. He'll be deeply missed and long re-

membered. Chief Dibble was our battalion's finest chief and he and LT Rhodes were inseparable. He leaves a wife and several fine young sons. He, like LT Rhodes, volunteered for this tour in Vietnam. They did not have to come, but they did gladly. How does a man count such a loss? Petty Officer Morvay was an only son, and his parents will be badly shaken by this tragedy. I can't believe that this has really happened."

Then came the climactic day:

"*30 October*. Completed 90,000 square yard Helo pad at 0925 this morning. Squadron HMM 163 moved in in full strength. With this, the mission of the Ghost Battalion has been completed. Future construction at Site X, Quang Tri, will be formally turned over to NMCB-10 on 1 November during ceremony dedicating the airbase."

"*1 November*. Held ceremony dedicating the airfield. Ghost Battalion relieved by NMCB-10, CDR Bartley (Delmar A. Bartley)."

* * * * *

GEN Westmoreland had the highest praise for work of the Seabees in building Quang Tri, as he had for those who did the building at Dong Ha, Con Thien, Ca Lu and Khe San and elsewhere in I Corps.

* * * * *

From late 1966 through '67 the Seabee effort was climbing to its peak, and the northernmost area felt this surge. The catalogue of involvement grows overwhelming. And the stories of the accomplishments of details and Teams as well.

In mid-1968, Seabee strength in Vietnam totalled 10,500 men, in one brigade, two regiments, one Seabee Pacific Fleet detachment, 12 battalions, two maintenance units and 15 teams.

Their accomplishments were impressive. They had built three

major airfields in record time, cantonments to house more than 200,000 American and Allied troops, and a capacity of 200,000 barrels of oil storage. They had also provided enough rock from their quarries and crushers for an imaginary wall eight feet high and one foot thick along all of the South Vietnam borders with Cambodia, Laos and North Vietnam.

At this point, when the large-scale American involvement was about three years old, a concerted, large-scale move to provide more permanent quarters in the large base areas was beginning.

When his job was created, that of MACV–DC, BRIG GEN Dunn was charged with insuring that only minimum essential construction was provided for cantonment areas.

"Temporary" building structures generally were of wood with tin roofs. At first, the newly-arriving outfits depended on tents until something more permanent could be put up. But it was soon discovered that it would be cheaper to build "tin" (corrugated metal) roofs and vented wood siding than to keep replacing the worn-out tenting. In the wet and hot Vietnam environment, tenting had an average life of only six months. So "Southeast Asia Huts", cheap barracks shacks, as mentioned earlier in the section about the lumber shortage, had become the order of the day.

In mid-1966, MACV standardized the "Southeast Asia Hootch". The name "Hootch" apparently was an American corruption of the word "hutch" descended from the Latin "hutica", and French "huche", meaning an animal shelter, or possibly "hut", from Old High German "hutta", meaning a primitive house. Except for these European roots, there is nothing like it in any Asian language. The word for house in Vietnamese, incidentally, is usually Nha (Nha Tran—gtoreign house).

At the major logistics bases, the two-story hootch was the standard. Reason for this was that it saved real estate by doubling the numbers in each building; and it made it possible to concentrate more men close to the messes, laundries, etc.

Many thousands of quonset huts were also erected early in our large deployment in Vietnam because of the availability of this World War II type of half-barrel-shaped prefabricated steel structure. More than 7,000 of these were available to the Navy in 1965. However, they had to be tropicalized for Vietnam deployment, as already mentioned.

At any rate, as the third year of our heavy involvement in the

Vietnam war (1967–68) progressed, the SEAsia hootch, of various sizes, was the standard. And that year, MACV decided that in view of the long-term effort involved in this different kind of war, more substantial base facilities would have to be built.

BRIG GEN Daniel Raymond, then the Director of the SEAsia Construction Division, OSD, in a later Congressional House of Representatives Subcommittee on Appropriations (1968) hearing, explained what this "upgrading"meant, in Army terms:

"This term (upgrading) is applicable to troop housing and the next item, utilities. First, it includes the replacement, particularly in base areas, of so-called burnout latrines with more sanitary waterborne sewerage systems.

"It would also replace 'water point' water systems in which water is hauled in trailers to points of use such as kitchens and showers, with more economical piped distribution systems.

"It would replace small tactical power generators, and incidentally free them for field use, with more efficient and economical central sources and distribution systems.

"It would convert or replace many frame-supported canvas living shelters with metal or wood buildings. And it would provide for the paving of hardstands and on-base roads in the interests of increased operational efficiency and a reduction in maintenance requirements. All proposed upgrading is within currently authorized standards (a reassurance that the proposals did not call for anything untoward or too luxurious for the GIs)."

He went on to emphasize that both the Army and Marines had been suffering from having to live in the worst quarters provided by Americans for their troops in Vietnam:

"The Army has lagged behind in providing authorized standards of troop housing in Vietnam for a number of reasons: Troop housing was given a lower priority than operational and logistic requirements. Additionally, on several occasions, even that troop housing which was programmed was deferred due to re-programming actions to meet urgent operational needs. . . .

"Also, quite frankly, the Army and Marines went into Vietnam with the original intention of living under field conditions as they had done in other wars. It was only when it became apparent that many units, particularly in the base areas, would remain stable that the need for more substantial facilities became apparent."

The basic fact was that in a modern, far-off war such as this, with our up-to-date ("sophisticated") war weapons and techniques and our "Logistic Island" method of extensive bases for mobile operations, the number of logistic and support troops was large.

The ratio of support troops to combat troops was about 45 percent in 1966.

GEN Westmoreland was pleased (REPORT ON THE WAR IN VIETNAM) that the percentage of support troops fell below that peak 1966 level to 40.3 in 1967. "When compared with the 43 percent ratio experienced in World War II and Korea," he wrote, "this decline represented a remarkable achievement."

BRIG GEN Raymond spoke eloquently about the need for updated hospital facilities in his Appropriations Subcommittee hearing (mentioned above) in 1968:

"The Army request provides for improvement to existing evacuation hospitals by providing water distribution and sewage disposal systems, tile flooring for surgical and hospital buildings, installation of toilets, urinals, lavatories and showers in hospital wards, and air-conditioning in patient-care areas. The Army request will also provide additional dispensaries and dental-care clinics.

"The Army portion of this request is essentially for upgrading of hospitals that were initially constructed as an improvement over tents. Generally these hospitals consisted of quonset huts on rough concrete slabs without either piped water or sewage systems. While marginally adequate, they are difficult to clean, subject to intrusion by blowing dust, and subject patients to far less than therapeutic conditions."

As 1967 moved into 1968 (and the earth-shaking Tet Offensive early that year), it was already painfully apparent that a much-deferred logistics requirement—roads—must be urgently and massively planned and implemented. Without a decent road-net, a complex and sophisticated war effort such as ours would founder.

MACV published a report in October, 1967, after a lengthy study of the multifaceted problems of restoring LOCs (acronym for roads, or Lines of Communication). The study began by identifying several agencies involved in planning maintenance and new construction of LOCs—then finding that the coordination between these agencies was inadequate. It also found that as a result, there were overlapping programs and work duplication.

The RVN Joint General Staff decided to consolidate all LOC activities and implemented a unified road maintenance and restorative program. On November 1st, 1967, the Central Highway and Waterways Committee (CENCOM) was established. Through this central authority, MACV exercised control and established construction standards and priorities for the giant LOC program which was to follow.

* * * * *

In June of 1967, BRIG GEN Raymond, then the MACV–DC, wrote a report called OBSERVATIONS ON THE CONSTRUCTION PROGRAM, RVN. Based on his experience as MACV–DC in 1966 and '67, his paper came up with trenchant recommendations on what should be done to improve construction practices in future war emergencies.

Secretary McNamara sent the document to each of the military departments, some of the Defense agencies, and to the Joint Chiefs of Staff. The JCS established a Special Military Construction Study Group (SMCSG) to study the problems raised by GEN Raymond, and make an analysis. Their study was not completed until July 1968. Their recommendations were approved by JCS in December 1968, and took effect beginning in 1969.

Meanwhile, Edward Sheridan in the OSD Installations and Logistics office, issued a manual on construction in war ("contingency") operations.

This manual on construction in contingency operations grew from BRIG GEN Raymond's "Observations" and from the several Service comments on his report. As the action office for the Navy during late 1967, the Facilities Engineering Command reviewed its operations in Southeast Asia in great detail to provide a comprehensive comment on the Raymond study. This "Navy Analysis" was a detailed review of the operation from the Navy point of view and not just a statement of agreement or disagreement with BRIG GEN Raymond's conclusions. Many of the innovations appearing in the OSD Manual originated in this Navy Analysis. It also served as

a valuable source document for the separate study initiated by the Joint Chiefs of Staff and the more comprehensive study by a Joint Logistics Review Board created in 1969. It was a distillation of the significant lessons learned.

During the preparation of the Navy Analysis it became clear that there were a number of significant lessons learned which were of interest only within the Facilities Engineering Command—internal NAVFAC lessons learned. As a result, after the Navy Analysis, the Southeast Asia Coordinating Group proceeded to a more exhaustive analysis of the BUDOCKS/NAVFAC operations and a second report, the "NAVFAC Analysis" was prepared. A study of both of these reports would be of major importance to serious students of this operation.

Several long-term actions were initiated as a result of the NAVFAC Analysis. First, a publication was prepared which combined all the pertinent studies of the construction program for future reference. A second major product was the preparation of a definitive organization, listing of equipment and material and standard operating procedures for an OICC operating in a contingency or limited war situation. With this planning and documentation, if it were to become necessary to create a new OICC at some future time, the new staff could focus primarily on the workload, not on internal organization and procedures.

Another major publication effort was initiated as a result of the NAVFAC Analysis—the rewrite of the old Bureau of Yards and Docks Manual for the Administration of Cost Plus Fixed Fee contracts. It had been concluded in the internal NAVFAC study that a more comprehensive manual would be desirable for the future.

The old Manual, the NAVDOCKS P–274, focused primarily on the accounting and property management responsibilities of the contractor. The new manual was published in four volumes. Volume I was addressed to a customer of a NAVFAC OICC, telling that agency what a cost reimbursable contract is and the role of each party involved—with special, detailed emphasis on what the customer had to do to enhance the effectiveness of the "construction system". The lesson learned from the operation of the "imperfect system" in Vietnam was the primary origin of this volume. We had learned that the whole effort will work better if the custo-

mer, Service sponsor or other agency, has the best possible appreciation of the entire operation. Volume II of the new manual covered the role of the OICC and Volume III of the contractor. In each of these volumes the focus was on the total management problem, not just on accounting. The content of the OICC volume, of course, closely paralleled the "contingency" OICC discussed earlier. Volume IV is a bibliography of reference material which could be useful in the management of future cost reimbursable contracts. This volume was given limited distribution. It includes data on the computer programs which were employed by RMK–BRJ and complete details on the LOE system.

The basic concept in this new manual is that the concepts of the LOE system could be applied to a new program according to its size and complexity. The full scale, highly computerized operation obviously would be useful only on a very large program. But the principle of balancing work load, capability and funds will be equally applicable in the smallest kind of cost reimbursable project.

The Navy Analysis and the studies conducted by higher authorities (OSD Manual on Construction in Contingency Operations and the JLRB Monograph on Construction) all considered the most effective way of using the Level of Effort principles in a new, urgent, large program. One of the principal findings was that the costs of mobilizing the capability should be separately funded, i.e., not recovered from project costs by the application of a burden rate. The serious student can learn the full details of the proposed changes to the procedures for funding this kind of construction program by a detailed review of these studies.

Both Sheridan's report and that of the JCS agreed that many changes in many policies had to be made. Mainly, both wanted more flexibility in response, better planning and funding. Most important in both reports were better plans for "instant" ports, better prefab buildings, and plans to coordinate the contigency plans of the various Services.

Other large-scale studies were begun. The biggest one, which dealt with the entire field of logistics, was titled *A Report By the Joint Logistics Review Board*. The Review Board was headed by an Army four-star general, Frank S. Besson, Jr., with four three-star generals on it. The Navy representative was VADM Edwin B. Hooper, a veteran line officer with wide Navy experience, who

had commanded Navy Service Forces at Pearl Harbor for the whole Pacific area and Asia from 1965 to '68. He had later become Assistant Deputy Chief of Naval Operations (Logistics) and after that, the Navy's Historian.

There were 105 military officers and civilians working on the project, which began work in March, 1969. It finished its findings and recommendations in 1970, and published its monograph on construction in 1972. The recommendations were comprehensive, included every aspect of the construction programs. It has become the Bible or brief encyclopedia on the subject.

CHAPTER TWENTY

The Teeth of the Tet Offensive —1968

The Tet Offensive of early 1968, when the after-action reports and captured enemy documents are considered, was a "Go For Broke" effort. Seen from the North Vietnamese command viewpoint, the Communist revolutionary effort in South Vietnam had reached the Third Stage in Mao Tse Tung's pattern. This meant that the Viet Cong military forces and propaganda machine and the NVA divisions which had infiltrated via Laos, Cambodia and the DMZ were thought to be strong enough to overthrow the Thieu-Ky government and throw out their American and other Allies.

But in this Offensive, as in the Easter Offensive of April 1972, the Communist plan eventually backfired.

For the Tet Offensive, GEN Giap and the other NVA planners scheduled their greatest troop efforts in 36 major cities, and sent in political organizers to five cities to organize a new government after the fighting subsided.

It was expected that the locals would enthusiastically join the euphemistically-titled "New Alliance for National Democratic and Peace Forces", which the VC and NVA were ordered to set up. Giap's plan was to use Viet Cong units for the initial fighting and employ his NVA divisions to exploit the successful "revolutionary" incursions. In many places, the military units planned victory parades.

American intelligence reports and interrogation of prisoners indicated that the enemy planned an attack just before or after Tet, but it wasn't known how general an offensive it was going to be. Because of this uncertainty, GEN Westmoreland set aside a reserve of five U.S. battalions to move where needed.

The enemy smuggled weapons and ammunition in vegetable trucks, funeral carts and sampans, in the heaviest concentrations into Hue and Saigon.

Westmoreland and the Chief of the Vietnamese Joint General Staff, GEN Vien, made plans to concentrate available Regional and Popular Forces on the approaches to Saigon from the west and south. This was done. But during the Tet holiday (and announced Viet Cong truce), about half of the Vietnamese units were on holiday leave.

Large numbers of Viet Cong slipped into Hue and Saigon in civilian clothes, melting into the pre-holiday crowds. GEN Westmoreland comments: "The Vietnamese National Police were ineffective in stopping or detecting the magnitude of the enemy's effort."

The assaults in Saigon were planned against the modern kind of targets—those chosen for maximum psychological and propaganda effect on the Vietnamese public and American and world opinion.

The same was true of the targets elsewhere in Vietnam: at Hue, Can Tho, Da Nang, My Tho and Ben Tre (south of My Tho), at Kontum and Ban Me Thuot, and most of the other cities and towns. The targets were designed to foster the thesis that these attacks were the result of a nearly-spontaneous people's revolution in South Vietnam. And to support the transparent falsehood that no North Vietnamese troops were involved, except sympathetically.

Thus the targets in Saigon were the American Embassy, the Presidential Palace, the American Armed Forces Radio and Television Station, Saigon's Tan Son Nhut airport and the Vietnamese Joint General Staff Compound. Headquarters would be set up in Cholon, the largely-Chinese section in the western part of Saigon where the North Vietnamese-VC effort had the largest numbers of supporters.

The general design of the attack thus was to seize the power centers: our military headquarters, including the American Little Pentagon, if the raiders could get in. Certainly of equal importance, the radio station, so that further psychological bombs could be planted—stories that the National Liberation Front and the revolutionary "New Alliance for National Democratic and Peace Forces" were succeeding with their righteous popular effort.

The first moves in the Tet Offensive were in the northern corps area of South Vietnam, the I and II Corps. This was apparently the result of a communications foul-up on the Communist side. The attacks in the south were 18 to 24 hours later.

These northern attacks were at first very successful—but quickly turned back in Da Nang, Qui Nhon, Quang Tri, by Vietnamese and American forces.

Our casualty toll was heavy. From January 28th through February 1st, 1968 (the period of the initial offensive) we lost 416 Americans killed in action and 2,575 wounded. The loss in South Vietnamese soldiers, Marines and fliers was 784 killed and 2,330 wounded. MACV estimated the enemy losses in killed and wounded at 15, 515—approximately three times our casualties.

In Hue, a heavyweight effort was mounted by the NVA Fifth Division and 324B Division, plus the Viet Cong 416th Battalion. In all, eight battalions of NVA and VC attacked. The enemy rapidly seized the south bank of the Perfume River and soon, most of the northern part of the city.

The fighting in and around Hue cost us more than 500 U.S. and ARVN troopers dead. And about 3,000 government officials, school teachers, and other known supporters of the Thieu government were killed in mass executions.

And the Seabees at their base near Phu Bai, nine miles south of Hue, at Camp Wilkinson, Gia Le, paid a price in blood during the first assault of the Tet Offensive. A fighting trench full of Seabees from NMCBs 3 and 8 was hit by a 122mm rocket on January 31st, 1968. Seven men were wounded, and one killed, EOCN Lawrance N. Stangel.

At 12:20 p.m. on February 1st the enemy launched another rocket attack on Phu Bai, with short rounds falling on Camp Wilkinson. One projectile landed near the mess hall and wounded eight Seabees of NMCB-8, killing SN Richard L. Blevins of NMCB-3. NMCB-8 was in the process of relieving NMCB-3.

When the fourth planeload of NMCB-3 Seabees was taking off from Phu Bai airbase, they came under mortar fire. It looked as if the VC and NVA were really after the Seabees of Three. But no one was hit this time.

Farther south, at Camp Hoover, Da Nang, a check-point crew

from NMCB–9 on Route 3 had small arms fire from east of the highway (early on February 1st). The Seabees fired and saw two "secondary" explosions—meaning perhaps they had hit into fuel or explosives. At dawn, they sent out a patrol to investigate. The patrol was properly aggressive. They were hit by automatic weapons fire. BU1 B. R. LeMaster and BU3 G. T. Lagrone were wounded.

At Tam Ky, 40 miles south of Da Nang on Route 1, close to Chu Lai, NMCB–6's detachment came under night attack January 31st. The detachment, under LT Gary Weisner, was 55 men strong, and strong in effect. They sprang into the the defense forces with a will, fighting beside the regular Marine and ARVN troops defending military headquarters.

The firefight went on until 10:30 a.m., when the enemy were driven back. A body count of NVA–VC forces showed 581. In the sector opposite the Weisner detail, 46 enemy killed-in-action were officially chalked up to them.

At Chu Lai, 18 miles farther south on Route 1, the coast road, the Seabee Camp Shields was hit twice by VC–NVA rockets in the initial Tet assault. There were no casualties among the Seabees of NMCB–40 there, but the same assault set off an A.S.P. (Ammunition Supply Point) near the airbase and the blast of the explosions flattened two hangers and an engine repair shop. The Seabees turned to immediately to fix up the damage.

At the Quang Tri military base—built by the "Ghost Battalion" under CDR Foley and LT CDR Ahrens—the Viet Cong were aided by troops of the six NVA divisions committed to the northern provinces by GEN Giap. Casualties among the garrisoning Marines, however, were moderate and so were the Seabee (NMCB–10) casualties: 10 Seabees were wounded.

At Camp Faulkner, Da Nang, (NMCB-128) on January 31st, the VC and NVA made mortar and rocket attacks, then ground assaults on our installations along the river west of the camp. The enemy made their assaults from sampans, or with swimmer-sapper raiders wearing harnesses of plastic explosive and detonator cord. The Seabees observed good fire discipline, got approval of the sector coordinator to open up, then turned to with M–16 automatic rifles, M–79 "elephant gun" grenade launchers, and expert fire with M–60 machineguns—and the enemy was turned back. Furthermore, the

Seabees spotted the enemy rocket-launching positions—and directed Marine artillery fire on them. They also spotted two enemy infantry positions. They were earning their salt as fighting buddies of the Marines.

At the remote aluminum landing strip at Khe Sanh, ten miles from the Laotian border and athwart one of the main branches of the many-pronged Ho Chi Minh Trail, the encircling force of NVA troops had been increasing to between 10,000 and 20,000. In the first 24 hours of the Tet Offensive, the Communists threw a nerve-shattering 740 rounds of artillery. But that night and day, no Seabees of the Khe Sanh CBMU-301 detachment were injured.

With the Tet Offensive the Seabee casualties shot upwards. In February and March, during heavy fighting started by the Tet Offensive, 14 Seabees were killed in action and 57 wounded. The Army, Marines, Navy and Air Force had 2,024 killed and 18,651 wounded. And in the same period, the South Vietnamese casualties reached 4,714 killed and 21,273 wounded. Our official claim of enemy dead was more than 45,000.

As the intensified fighting started furiously in I Corps, the NVA and VC launched their delayed attack on Saigon (24 hours later). One of the first blows was struck as sappers blew a hole in the wall of the U.S. Embassy and penetrated to the ground floor of the main building. But thanks to the courageous work of the U.S. Marine guard and a quick-acting detachment of the Saigon Army Military Police (with 26 wounded and eight dead among our troops) the raiders were ejected. It was a fierce, long struggle and 14 enemy bodies were counted.

It was a good thing the helicopter pad had been designed and built on the Embassy roof. Reinforcements were flown in and key people evacuated by chopper. But the raiders fortunately never reached any vital installations.

The enemy attack on the Embassy was supposed to be coordinated with supporting assaults on other vital targets—mostly turned back by the Vietnamese National Police. Also failures after a few hours of bloody fighting, were attacks on the Presidential Palace, the Radio Station and the Vietnamese Joint Chiefs Headquarters.

Other attacks in the Saigon vicinity were more successful. The main assault in Cholon, the Chinese section, where the enemy set

up his headquarters, was successful for three days. Headquarters were set up in the Phu To Race Track. With our heavy artillery and fighter-bomber assault, the area was quickly reduced to rubble, and most of the enemy killed. Yet somehow, though we knew where they were, the enemy effort managed to survive for three days before fading back into anonymous insurgency.

At the giant Tan Son Nhut military complex, some Viet Cong dressed in ARVN uniforms to gain entrance, managed to hold on to two parts of the base for two days.

The first day, to reinforce the strained garrison forces in the Saigon vicinity, GEN Westmoreland broke his rule against sending American troops into active military operations in the capital city and dispatched seven U.S. battalions to help the Vietnamese Rangers, Airborne, Marine and Regional Force troops. Many of the U.S. forces were stationed along approach roads into the city, to prevent reinforcement of the enemy troops engaged in the city.

After-action reports placed the enemy forces inside the city as elements of 11 battalions—probably a total of between 4,000 and 5,000 men. The main mission of this relatively small force was to marshal and lead the supposed popular movement which was going to emerge. It was significant that the insurgents were able to keep on fighting in only half a dozen of the 32 main target cities: Hue, Can Tho, Ben Tre and Kontum and Ban Me Thuot, in the central plateau country.

But in the country districts, and in the suburbs around many of the cities (like Saigon), they were able to keep on with mortar and rocket attacks and harassing raids during February and March.

The VC and NVA went after the old Route 1 highway, the French north-and-south main blacktop, with a vengeance. On February 4th, two Seabees of NMCB–128 were blown up by a land mine on a side road off Route 1, six miles north of Da Nang. They were LT (JG) Michael D. Hollingsworth and Builder First Class Paul T. Hallman.

At Hoi An, a hotbed of insurgent activity 15 miles south of Da Nang, on the South China Sea Coast, Route 1 and surrounding terrain was seized by the enemy and held till February 11th. But Korean Marines re-established control. And a detail from NMCB–58 followed almost concurrently.

To the north of Da Nang, a long section of the route was grabbed by the enemy and held until the 11th of February.

The northernmost section of South Vietnam was taking a continuing beating, and the Seabees frequently had more than their share. At Quang Tri Combat Base, heavy rocket and small arms fire again hit into our installations in the early morning of February 27th. One Seabee was wounded. But the Seabees pitched in to help the embattled Marines with defensive fire. They helped to repulse the enemy, then moved in with their earthmoving tools, and the runway was reopened by 11:30 a.m.

* * * * *

The year 1968 was the peak period of Seabee deployment in Vietnam (as of the other military engineer units). Many top military commanders, including GEN Westmoreland, felt it was now clear that the military engineers were better fit for building in times of extreme stress than the civilian contractor.

RADM Enger, then the Vice Commander of NAVFAC, later recalled: "You need a reasonable proportion of military engineers to accomplish some things, and really, we were under near combat conditions in all of Vietnam during the TET Offensive and immediately thereafter.

"The contractor lost strength not because of the Americans or the Third Country Nationals, but because the Vietnamese themselves could not or would not come to the job. . . . What we lacked was the great manpower from the Vietnamese that we really needed to accomplish the large quantities of construction."

In GEN Westmoreland's view, the construction effort of the contractor came to an almost complete stop with the advent of the Tet Offensive. The Vietnamese workers simply did not show up on the construction sites. Their American and Third Country bosses tried their best, yet without their labor force, they were powerless until security was restored and the workers came back. But the NMCB units and the other military engineers not only continued working, but fought off enemy attacks.

A good example would be the Seabees of NMCB–10, headquartered at Quang Tri. Besides helping the Marines in beating back frequent attacks, the Men of Ten kept on working throughout

the offensive. One of the seriously-wounded heroes of this effort by Ten was EO2 H. W. Schroedermier, whose motor grader hit a land mine on the road job.

Most of the action involving Seabees centered on the main highway, Route 1. The enemy gave plenty of evidence of his awareness of the importance of the lines of communication—roads, bridges, rivers and the railroad.

Five Seabee battalions, NMCBs 5, 8, 10, 62 and 121, with Marines to help where there was large VC opposition, worked for 11 days to clear much of this road. It was not done at one fell swoop. It was section by section, culvert by culvert, bridge by bridge, and sometimes mine by mine.

On February 6th, a mobile crane hit a land mine, wounding driver EO2 W. W. Wolf of NMCB–10.

On February 10th, NMCB–62 Seabees were attacked twice near a bridge they were repairing. No Seabee casualties, one Marine of the escort force wounded.

On February 11th, an NMCB–62 work crew repairing bridges was mortared. No casualties.

The same night, their work camp was mortared, without casualties.

The next day the same bridge repair crew was attacked three times with sniper and AK–47 (automatic rifle) fire. But the Seabees responded aggressively with fire.

That night, more mortaring of the camp site, again without casualties among the battle-wise Seabees.

On February 13th, a front-end loader of 62 set off a mine and was damaged—without injuries. Same with an NMCB–62 dump truck on the 14th.

Again on the 15th, a lowboy's rear end was damaged by a land mine, without casualties.

But on the 17th, the luck of the NMCB–62's work crews ran out. The enemy set an ambush and detonated a mine under a truck, then attacked the stalled convoy with AK–47 fire. The Seabees fought back aggressively: four wounded, EO3 Amon F. Moore, Jr., was killed.

The same day, two mining incidents hit NMCB–10 on Route 1. Five Seabees were wounded when two trucks hit mines. HM1 B. A. Becker, EO3 L. D. Brumby, EO3 V. J. Lloyd, CE3 M. R. Mason,

and EOCN N. S. Davidson, all sustained minor burns and fragment wounds.

Near the northernmost extremity of Route 1, at Dong Ha, NMCB–5's construction site was hit by NVA artillery fire on February 19th. Three Seabees were wounded: EO1 J. H. Reynolds, EO3 O. J. Estus, and CA T. L. Collins.

On February 23rd, a road crew from NMCB–121 began to clear Claymore Pass and the Bowling Alley on Route 1 at Hai Van Pass north of Da Nang. Heavy mortar fire hit the trucks climbing the slope to the Pass. Two were hit, wounding the drivers. And a TD–15 dozer hit a mine, without casualties.

South of Da Nang at Hoi An, on a vital connecting link of Route LTL–4 (East–West), the wooden Liberty Bridge, the VC blew two of the spans. The date was February 23rd. They also burned 31,000 board feet of timber in a storage area. But the Seabee workers were alert and experienced. There were no casualties in the work detail of NMCB–9 at the bridge.

Somehow, although the initial Communist assaults had been driven back with large losses, the NVA managed to keep up their pressure against many American and ARVN and Allied (mostly Korean) bases.

Especially in the northern and central sections of South Vietnam, the enemy was well supplied and well supported with artillery. Heavy fighting continued in Hue, Kontum, Dak To and Ban Me Thuot. And thanks to a network of supply bases in the jungly hills of the Ashau Valley, northwest of Hue toward the Laotian border, the enemy resupply was remarkably efficient.

To recapture the imperial city of Hue, U.S. Marines were having to fight their way with tanks, artillery and dive bombers as the enemy resisted stubbornly. And the Americans killed in action all over the country averaged 200 to 400 a week, and about twice that many ARVN.

For 11 weeks the siege of Khe Sanh continued, and an NVA force of 30,000 to 40,000 men pressed closer to the besieged strongpoint. The garrison force of three Marine battalions, an ARVN Ranger battalion, and a CIDG company, beat back many attacks of ground troops, and frequently, B-52 bombers dropped their loads within a mile of our front line trenches to beat back the enemy.

Several news correspondents suggested that the North Vietnamese

were seeking to turn Khe Sanh into another Dien Bien Phu, the strongpoint where French armies had been decisively beaten at the end of the French war in 1954.

The heaviest single day's artillery bombardment of Khe Sanh came on February 23rd, when 1,307 rounds of artillery, mortar and rocket fire hit the base. But the enemy ground troops never got beyond the barbed wire perimeter defense. And details from NMCBs 5, 10 and 53, and CBMU–301, risked their necks to provide instant repairs to the runway, even under heavy rocket, mortar and artillery fire. Thus the aerial resupply planes, C–123s and C–130s could continue to land and take off. So could the vitally important air evac helicopters carrying wounded to surgical care in the rear. All the Seabee detachments present in the vicinity were given Presidential Unit Citations for gallantry under fire.

On March 31st, as the NVA-Viet Cong forces continued to find strength enough to attack our outposts, an assault was made on the Seabee quarry at Phu Loc, 35 miles northwest of Da Nang on Route 1.

The Phu Loc site (the name probably means "Chosen Prefecture Capital") was picked by the 32nd Naval Construction Regiment Commander, CAPT James M. Hill, and Marquis Quisenberry of the 3rd NCB staff.

The area was lightly held by our forces. Route 1 was insecure, and Viet Cong and NVA forces made frequent raids and set up ambushes for passing columns. The available friendly forces were passing Marine patrols until the outbreak of the Tet Offensive, when the situation degenerated from bad to even more desperate.

The period of the Tet Offensive started three days after Detail Echo of NMCB–9 moved in to Phu Loc, but fortunately, and undoubtedly because of the heavy security measures, the NVA and Viet Cong did not strike until March 1st. As of that date, the primary crusher and two P and H shovels and three D8 bulldozers that were shipped with it, had not yet reached the camp. It was not until March 14th that this primary crusher unit arrived.

The Viet Cong began the first of their strikes against the Seabee quarry and camp on March 1st, with a barrage of 57 millimeter (2¼-inch) recoilless rifle fire which hit the camp. It was timed to coincide with the massing of the Seabees for payday, and wounded four of the lined-up men.

The second attack came March 6th, timed to hit the work-parties unloading a 55-vehicle convoy which had just arrived from Da Nang. This, by the way, was the first convoy to reach the quarry site since the beginning of the Tet Offensive. Two more NMCB–9 men were wounded then.

But the heaviest blow was struck by NVA and VC on March 31st. At 2:25 that morning, the Truoi River Bridge, 2½ miles from Detail Echo's camp, was assaulted by about 200 enemy troops.

A two-gun section of U.S. Marine 8-inch howitzers was then well located in the Detail Echo camp, well-positioned to range on the attacking enemy.

The enemy struck with an 82mm mortar (3⅓ inch) and 57mm recoilless rifle fire barrage into the Seabee camp. Of the 25 rounds which hit the camp, one recoilless rifle shell hit a barracks tent, wounding seven men. One, CN James F. Galati, died later in the day from massive head injuries.

Two NMCB–9 mortar crews and the two Marine big-bore howitzers ranged into the suspected enemy troop concentration area. Unfortunately, the regular Marine infantry platoon on patrol duty had been temporarily withdrawn for some other Tet Offensive necessity, so little other counterattack activity could be mounted then.

At 8:10 a.m., the enemy opened up again with 82mm mortar fire, this time aimed at the Seabee mortar and howitzer positions.

The Seabee and Marine gun crews fired back almost immediately. The third and fourth enemy mortar rounds scored direct hits on the Seabee mortar emplacement, killing five of the six-man crew, seriously wounding the sixth.

Killed immediately were BU3s George De Shurley, Allen L. Mair, and John F. Peek; and BUCNs Mark E. Hodel and James R. Retzloff, Jr. CN T. D. Terrell was seriously wounded. But before this catastrophe, the mortar crew (it was discovered by a later reconnaissance) had scored several direct hits on the enemy mortar position, and killed several of them.

Later (April 6th), as the spectre of the Tet Offensive faded somewhat, the Hill 494 quarry, crusher and cantonment was officially dedicated and named Camp De Shurley.

As the Seabee roadbuilding effort in Northern I Corps progressed later in the year, the high-quality Camp De Shurley rock was

instrumental in rebuilding and reconstructing the critically important Route 1. RADM James V. Bartlett, then Commander of the Third Naval Construction Brigade in Da Nang, sent a congratulatory message about this to NMCB–9:

"1. THE CAMP DE SHURLEY ROCK PRODUCTION FACILITY, PIONEERED, DEVELOPED AND OPERATED BY DETAIL ECHO OF NMCB–9 REPRESENTS ONE OF THE MOST SIGNIFICANT ACHIEVEMENTS OF THE ENTIRE SEABEE EFFORT IN VIETNAM. THE OUTSTANDING ENGINEERING AND CONSTRUCTION SKILLS APPLIED TO THIS UNDERTAKING CREATED A FACILITY THAT PRODUCES VITALLY NEEDED ROCK OF SUPERB QUALITY WITH THE UTMOST EFFICIENCY. . . .
2. THIS ACHIEVEMENT SO IMPORTANT TO THE SEABEE CONTRIBUTION TO THE TASK OF STOPPING THE COMMUNIST AGGRESSOR AND BUILDING A BETTER VIETNAM WAS NOT EASILY ATTAINED. IT DEMANDED THE TOTAL ENERGY OF EVERY MAN IN THE DETAIL, AND, THROUGH ENEMY ACTION, IT EXACTED A TOLL OF SIX SEABEE LIVES. TO ALL WHOSE LABOR PRODUCED THIS MODEL FACILITY: WELL DONE. RADM BARTLETT SENDS".

More details of the remarkable build-up of that first step for road building, the quarrying and crushing of rock, follow shortly in an interview with RADM Bartlett.

In many ways the offensive spurred more construction activity. One example was the Wonder Arch aircraft shelter, long a favored project of the Air Force. The Wonder Arch was a steel aircraft shelter, reinforced with concrete, designed to protect our multimillion dollar "birds" (like the F–4 fighterbomber) from bomb and rocket damage while they sat on airfields between missions.

An Air Force Weapons Laboratory Study concluded their first tests in May of 1965. At that time, AFWL had found one "off-the-shelf" bit of hardware which might work as the basis for further bomb shelter tests. This was the double-corrugated steel arch building made by the Wonder Trussless Building Company.

AFWL did further testing with the Wonder Trussless steel arch, using various materials for covers—meaning impact protection and insulation on top of the steel, between 1966 and 1968. Tests were at

Eglin, Kirtland and Hill Air Force Bases. The materials used for reinforcement against blast and penetration were earth, soil cement, sandbags, and concrete.

The extra emergency of the Tet Offensives lent urgency to the needs—many aircraft were destroyed and damaged by enemy rockets, mortars and artillery in many types of revetments then in use in Vietnam.

The AFWL conclusion was that an 18-inch cover of 3,000 psi unreinforced concrete on top of the Wonder Arch would provide the most suitable aircraft shelter for Southeast Asia.

Construction by USAF RED HORSE eingineer troops of 392 Wonder-type arches (to be made by the Marwais Steel Company) was to begin in July of 1968.

The initial work was slow. Although these sturdy Wonder Arches were standardized in construction, there were problems in assembly, alignment, and construction. Another plaguing problem was the shortage of concrete batch plants among the military engineers for the concrete covers.

In late 1968, the U.S. Seventh Air Force in Vietnam asked for RMK-BRJ assistance in covering all of the Wonder Arches at Tan Son Nhut, 68 at Bien Hoa, and 53 at Da Nang.

The contractor wheeled into action with large capacity concrete batch plants plus a large fleet of truck-mounted transit mixers. He averaged 0.8 shelter covers per day during the finishing of the 392 Wonder Arches.

This operation stretched into 1969, but to flash ahead of chronology for a moment, that year the Wonder Arch Shelter proved its worth. At Da Nang Airfield, in May of 1969, a 122mm rocket scored a direct hit on a concrete-covered Wonder Arch shelter with a bomb-and-ammunition-loaded Air Force F–4 fighter-bomber inside. The $4 million aircraft was undamaged.

The economics were impressive. The cost of a completed Wonder Arch shelter, including the concrete cover, came to about $30,000. But when a $2 million to $4 million aircraft was to be saved, it was remarkably cheap insurance.

So in the Spring of 1969, the Seabees started on the Marine Wonder Arch program. They erected 45 for Marine Air Group II at Da Nang. RMK–BRJ in November of 1969 covered these steel arches with a minimum of 18 inches of concrete. The Seabees erected

and covered 20 more Wonder Arches at Marble Mountain Airfield, and 40 more for Marine Air Groups 12 and 13 at Chu Lai.

* * * * *

One of the most desperate construction needs, which grew much more acute as troops moved north to take care of the brunt of the Tet Offensive, was housing. In I Corps particularly, the need was met by a program called MER, yet another in the bewildering array of acronyms, standing for Minimum Essential Requirements.

The MER program, like the Wonder Arch, was goaded into emergency action by the Tet Offensive. The Army's First Air Cavalry, the 101st Airborne Division (Screaming Eagles) and the Fifth Mechanized Brigade (armored), flung into the I Corps to reinforce the U.S. Marines at such central battle places as Khe Sanh and Quang Tri, were still in tents when August 1968 came.

The MER program to get the Army out of tents and mud and into the dry, began to take effect then, under CAPT A. W. Walton, the newly-arrived commander of the Seabees 32nd Naval Construction Regiment. Of this, more later.

The intense activity of early 1968 also resulted in greater emphasis on the LOC construction program. In South Vietnam, one of the harsh realities was that sampans, railway, buses, and trucks are the only kind of mass transport—not much of a surprise in a Southeast Asian country. Private autos and even motorbikes were generally beyond the economic reach of the people—despite the evidences of the traffic glut in Saigon. Also high in the list of hard realities was that without open waterways and trucking to get farm produce to market (even the overloaded tricycle-motorcycle with truck body did fine), trade would stifle. And in the military sense, roads, rivers and railways were the way to quick mobility for tactical movements of the heavy weights of modern warfare.

Thus the Navy's vigorous program for a Riverine fleet of patrol vessels and cargo and transport craft was a basic necessity. For the first time since the American Civil War, ironclad gunboats rem-

iniscent of the MONITOR and MERRIMAC prowled the rivers. The Riverine activity was heaviest in the canal-and-river-streaked Delta ricebowl, but it stretched all the way up to Cua Viet a few miles from the North Vietnam border.

The enemy tried to reduce our use of the LOCs in many ways. An effective way to block river traffic was to drop a bridge span across it. This was often done by frogmen, many of them being well-trained North Vietnam Army swimmer-sappers.

Action continued intensely on the rivers of the I Corps in February after the initial thrust of the Tet Offensive. In the Hue vicinity, cargo trips up the Perfume River were suspended with the early Tet attacks, to be resumed February 10th. Two of the NavSuppAct LCUs were destroyed, and 44 hit by small arms, recoilless rifle and mortar fire.

As the Lines of Communication Construction Program moved into gear in the midst of the various phases of the Tet Offensive, there was a half-billion dollars in funding to draw on for road building.

The LOC program was the biggest single building effort of both Army and Seabee engineering troops in the Vietnam war.

The half-billion-dollar budget, secured from the Office of the Secretary of Defense, was personally handled by GEN Westmoreland. The MACV Director of Construction coordinated the program by issuing directives to the Seabees, Army Engineers, the ARVN military engineers, and to the Navy OICC.

As funds poured into the program, massive highway equipment buys were made by troop commands and the contractor. By 1969, the design effort alone grew to $15 million as portions of the overall 2,500 mile LOC restoration programs were authorized by MACV.

As Tet fighting went on, the Seabees went on with their work, both fighting and building. Most of NMCB–58 moved in March of 1968 from Da Nang to Hoi An, 15 miles south on the coast, on a high priority order to build "ROK (Republic of Korea) City", a new camp for the Korean Marines, 8,000 strong. The work on this phase was finished by mid-June.

Other big projects put up by the Seabees in 1968 included the upgrading of nine helicopter bases and construction of Ammo Supply Point One at Da Nang, removing half of a mountain: more than a million cubic yards of earth. The biggest helo base of all, in fact the

largest in Asia, was the 1st Cavalry main helicopter headquarters at Red Beach, Da Nang, built at maximum speed (28 days), 124 acres of pierced steel planking. In addition, some 237.8 miles of roads were built in the embattled I Corps.

Beside all these wonders—many of them constructed amid determined enemy harrassment and frequent assault—they built oil storage tanks and facilities for 167,000 barrels, and 452,000 square feet of covered storage. Those vital fixtures of any giant military effort, ammunition dumps or supply points, were built at Chu Lai, Dong Ha, Da Nang, Phu Bai, Khe Sanh, Camp Evans (north of Hue) and Quang Tri.

* * * * *

The MER (Minimum Essential Requirements) Program to get the Army out of the mud (and tents) and into the dry—introduced briefly earlier—was to be one of the Seabees' major tasks of the war.

RADM Barlett, Commander of the overall Seabee operation, the Third Naval Construction Brigade, was assigned the job of getting the MER facilities built. He, in turn, tasked the 32nd Naval Construction Regiment in Gia Le, near Phu Bai, with the job. The overall boss thus became CAPT A. W. Walton. Walton had been on the staff of the NAVFAC Pacific Division and had been deeply involved in the contract efforts in Vietnam. He took command of the 32nd NCR in August of 1968.

Walton (later promoted to Rear Admiral) recalled: "The Army Divisions had only combat engineer battalions and were not equipped or logistically supported to accomplish the work. Thus began the Seabees' efforts to 'get the Army out of the mud'.

"The facilities were basically the SEA (Southeast Asia) Hut made of plywood, screening and corrugated roofing, and 100-man messhalls of similar construction. The overall direction came from the XXIV Corps commanded by LT GEN Richard Stillwell (through his civil engineer, COL Carroll Le Tellier). The logistics support was from the Seabee Brigade, Da Nang.

"From the start of construction in August of 1968 until the latter

part of November, over 5,000 structures were put in place, changing not only the morale of the troops, but the appearance of the countryside. After living in the mud while on combat operations, the troops could look forward to a 'high and dry' place to live when they came back to the rear area."

CAPT Walton was speaking particularly of the First Air Cavalry (Airmobile) Division, the 101st Airborne Division and the Fifth Mechanized Brigade.

As a war correspondent who served with the First Air Cav on their operations to clear the NVA from their big supply area in the Ashau Valley and their drive to relieve the U.S. Marine forces besieged in the far-west bastion of Khe Sanh, I can testify to the desperate need for improvement in home base living conditions at Camp Evans and Camp Eagle.

On the Ashau operation (the enemy had retaken our main base there in 1967), the quarters—even the best—were tents with board floors. We would go out on helicopter-borne strikes into the Ashau, which were predictably rugged and dangerous. But to come back to Eagle after the hardships, and sleep in a tent on a hillside blown by the dust-grimed 50-mile-an-hour rotor blast of choppers continually taking off and landing (and frequently blowing down your tent in the process) and picking one's way through mud to the Chick Sale latrines and fly-ridden messhalls, that was a long way from Home-Sweet-Home.

Such a camp, of course, was substantiation for the old trooper aphorism that in war you either breathe dust or wade through mud—nothing in-between. But that, of course, was before the Seabees came.

CAPT Walton summarized: "The reputation of the Seabees was reaffirmed in the minds of all who witnessed their working effectively, even in the driving rain in support of Army troops. Those of us in command were not surprised but the Army troopers were."

Of course, the Seabees, besides pitching in to execute the MER program, were devoting major efforts then and in 1969 and '70, to repairing and updating South Vietnam's primitive and war-shattered highway network—the giant LOC program.

As the Tet Offensive started in late January of 1968, the U.S. and South Vietnam had restored much of the rail service through-

out the country. But the NVA and VC methodically blasted out the key bridges and the tracks, too, on the railroad from Da Nang north to Hue. The enemy was anxious to cut the heavy freight lines—that meant the railway and the river routes—to Hue. The reason was simple—when the enemy blew out the railroad bridges he got a double-action result: not only did he knock out the railway, but he blocked the traffic on the rivers as well.

NMCB–1 was thrown into the repair of one vital rail section by the Commander of the 30th NCR, CAPT John R. Fisher (later promoted to Rear Admiral). The most grievous problem was just at the northern foot of Hai Van Pass, 15 miles out of Da Nang. Here, at the stretch of level ground which Americans called the Bowling Alley because of its openness and the frequency of enemy attacks, four key railroad bridges had been dropped by careful enemy action into the rivers they spanned.

This 13-mile stretch of railroad, with its four bridges, ran from the town of Lang Vei on the south to the Thuong Trung An River on the way to the Phu Loc Quarry and Hue.

The NMCB–1 detail averaged 48 men, and worked from late September 1968 to late December of 1968.

The work group, called Detail Foxtrot, was led by LT Theodore I. Harada, an American-Japanese (Nisei) CEC officer from Honolulu, Hawaii. Detail Foxtrot was composed of builders, steelworkers, electricians, cooks, and 2 communicators who doubled as divers. A Marine Gunnery Sergeant superintended security.

From the beginning to the end of the mission, Detail Foxtrot exhibited large quantities of the famed Seabee virtues of clever improvisation and energy.

The detail started work with a freight car at Bridge Site No. 1, with highly improvised propulsion systems. No locomotive or other conventional railroad power sources were available at first.

So the Seabees initially tried an MRS tractor, which fitted on the 40-inch wide tracks but became bogged in mud at the first high spot in the railroad embankment.

Several cobbled-up (shop-made) power sources were tried, including a truck fitted with rail wheels. At last, the Seabees borrowed a four-wheel-drive "Mule" and tried it on the tracks. It fitted exactly, and its air-cooled engine could push several cars along the track. The only drawback was that if the tracks were wet, the Mule would slip off.

All this happened in the first three weeks. Then a handful of technicians from the Vietnam Railroad Service and a company of ARVN troops to do the bulk of the physical work of restoring the railroad itself, arrived at Lang Co with a locomotive and cars.

Thanks to conscientious guard forces, first of U.S. Marines, later of the 101st (Screaming Eagles) Airborne, there was only one episode of enemy fire into one of the Seabee camps. That was at Bridge No. 3 (Hoi Mit River), and seven rounds of 82mm mortar fire fell in the camp area. No one, however, was injured. LT Harada recalled that Bridge No. 3 was the easiest to repair because it was so far gone.

Odd as that might seem, it was understandable because the Seabees did not have to pick the spans out of the water and jack them back up into position. With Bridge 3 they simply blasted away the old pieces and started fresh.

LT Harada said that Bridge 4 was the most challenging from an engineering point of view. Not only was this the longest span (163 feet), but the job involved extending the reach of the available crane with three "bents" or sets of capped piles for leverage in jacking the central bridge section back into position.

Harada said the on-the-spot leaders were First Class Steel-worker Larry Harjes, Builder First Class George Maahs, and BUC (Chief Builder) William Harris. Also Equipment Operator Second Class Barry Tillman.

The toughest challenge of the operation all through was Logistics—manhandling the heavy equipment and material in primitive conditions.

The biggest satisfaction, Harada said, came from lending power-drills to the Vietnamese workers, and seeing how much faster they could drill the necessary holes in their railroad ties—instead of muscle-powered drills. And second, in seeing Vietnamese farmers in the Lang Co station in January 1969 buying their tickets from uniformed railway employees. Now the Da Nang-Hue trip was only 50 piasters (less than 50 cents at the official rate of exchange).

"It was quite a good feeling, a very satisfying feeling, when I saw the people there waiting for the train. The women were there in the shade waiting for the train so they could sell food to the passengers. And the little children were running around with their little sacks of fruit to sell to the passengers when the train went by. And that single building next to the railroad tracks at Lang Co,

which was deserted and without a roof when we arrived, was an operating, functional railroad station fully utilized by the Vietnamese people."

* * * * *

The OICC under RADM Spencer Smith and the contractor, held up by the fact that many of his Vietnamese workers failed to show up for work during the Tet Offensives, was hard hit by the enemy actions.

But there were notable exceptions. In Saigon, when the American Embassy was attacked by the enemy, it took the better part of a day for a heroic American Military Detachment to clear the aggressive Viet Cong and NVA from the blasted building. The RMK-BRJ General Construction Manager, William Greetan, jammed together an emergency repair team and the next morning they patched a large hole in the Embassy outer wall. The team filled the holes with mortar and added paint to match the surrounding granite.

The RMK-BRJ supervisors made do with whatever Vietnamese labor they could muster, and pitched in themselves to help on many projects. But as Construction Manager Greetan said, "the workers who were available conducted themselves well and went about any task given them without question, even though their lives were sometimes in danger. We had men stay by their posts for six or seven days without relief—in fact, we couldn't get to them."

The general effect of the first Tet Offensive was to lose about a month's work. Those employees working on priority jobs were asked to work seven days a week to get back on schedule.

At Da Nang, RMK-BRJ could not get Vietnamese or Third Country Nationals on the base after the Tet Offensive. So to fill in as quarry drillers, welders, crusher mechanics, truck drivers and equipment operators, Seabees were borrowed by the Project Manager.

At the contractor's northernmost jobsite—at the embryo seaport of Tan My six miles northeast of embattled Hue—employees worked through the Tet Offensive and kept ahead of schedule in their construction of urgently needed facilities. This project in-

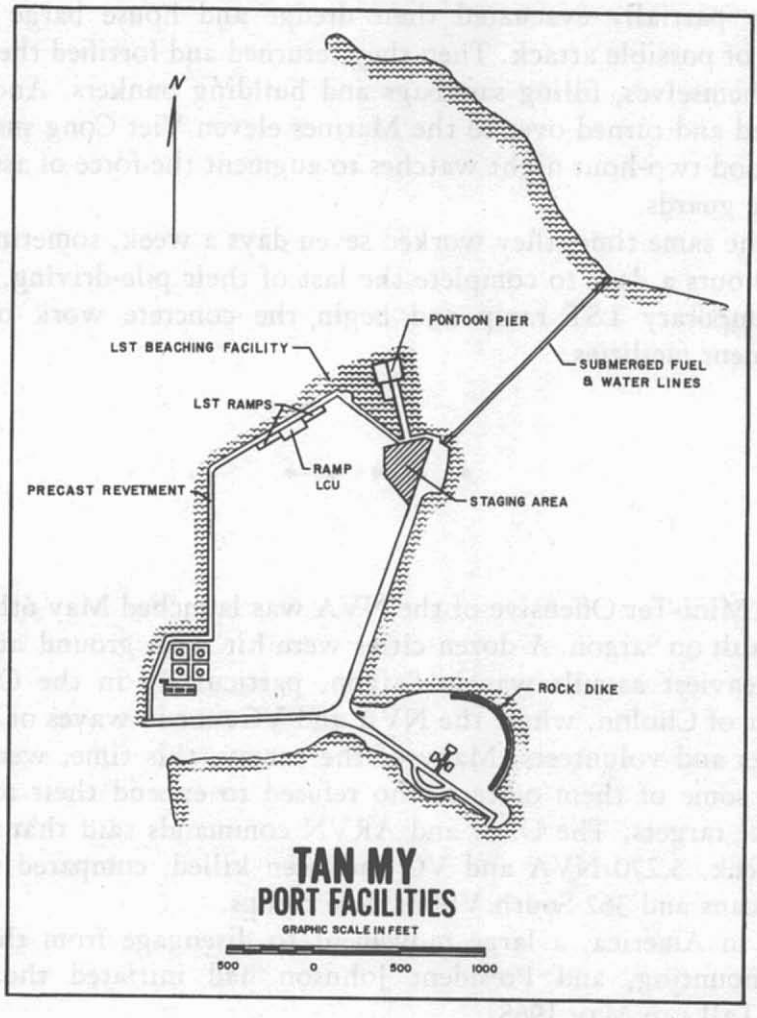

FIGURE 25

volved the development of an LST port outboard of Hue, to permit more effective support of the combat forces in the north. It had been started eight months before the Offensive. The need for improved port facilities north of Da Nang had been recognized very early in the U.S. commitment, but there was no really good site—no place for a feasible deep-draft port. The Tan My port involved dredging and the construction of four LST slips with an associated staging and support area.

They partially evacuated their dredge and house barge under threat of possible attack. Then they returned and fortified the camp sites themselves, filling sandbags and building bunkers. And they subdued and turned over to the Marines eleven Viet Cong suspects, and stood two-hour night watches to augment the force of assigned Marine guards.

At the same time, they worked seven days a week, sometimes up to 20 hours a day, to complete the last of their pile-driving, finish the temporary LST ramp and begin the concrete work on the permanent facilities.

* * * * *

The Mini-Tet Offensive of the NVA was launched May 6th with an assault on Saigon. A dozen cities were hit with ground attacks. The heaviest assault was in Saigon, particularly in the Chinese quarter of Cholon, where the NVA and VC sent in waves of young draftees and volunteers. Many of the enemy, this time, were captured, some of them officers who refused to expend their men on suicidal targets. The U. S. and ARVN commands said that in the one week, 5,270 NVA and VC had been killed, compared to 154 Americans and 362 South Vietnamese troops.

But in America, a large movement to disengage from the war was mounting, and President Johnson had initiated the Paris Peace Talks in May 1968.

Before 1968 came to a close, the number of Seabees and Navy Civil Engineer Corps officers in Vietnam declined from the high of 10,500 officers and men to 7,700.

When the new President, Richard Nixon took office in January of 1969, a new order of things in the conduct of the Vietnam war emerged. It was "Vietnamization."

This new policy was to build the Vietnam military and then other national resources so that they could be better able to take care of themselves in both a military and economic sense.

To the builders, both military and contractor, Vietnamization meant a spate of new orders: a balance of road and vertical or build-

ing construction which was to keep the builders going at a generally high level while the new President withdrew our regular fighting forces.

The impending LOC Program lead RADM Henry J. Johnson, who had relieved RADM Smith in July 1968, to initiate a major new equipment management program—to upgrade the equipment held by RMK-BRJ and to start procurement on the new equipment, which would be vital to the horizontal workload. This program ultimately gave both the OICC and the contractor a sophisticated tool for making the maximum use of all assets and minimizing equipment costs. It also contributed to the rapid disposition of the residual equipment during the close-out of the contract.

CHAPTER TWENTY-ONE

The Beginning of Vietnamization

On December 31st, 1968, the President-elect, Richard M. Nixon, made a speech in which he made his first public use of the word Vietnamization.

The whole phenomenon of Vietnamization had been foreshadowed, however, even before President Nixon's speech gave it a name.

Secretary of Defense Clark Clifford had spoken of the need for "accelerated progress in improving Vietnamese capabilities in order that the U.S. forces could, in fact, be withdrawn in significant numbers".

GEN Creighton W. Abrams, Jr., who had succeeded GEN Westmoreland as COMUSMACV in Saigon in June of 1968, had already discussed with the Joint Chiefs at the Pentagon a plan to turn over large amounts of U.S. equipment as U.S. troops might be withdrawn from Vietnam. The plan was laid out in such a way as to increase the military strength and self-reliance of the Vietnamese.

A U.S. Navy section of the turnover plan was put together as a recommendation to GEN Abrams by RADM Kenneth L. Veth, Commander of NAVFORV (Naval Forces Vietnam) in mid-1968. The plan was to turn over two River Assualt Squadrons (of our Riverine or Brown Water Navy) to the South Vietnamese before the end of Fiscal Year '69 (June 30, 1969).

When RADM Elmo R. Zumwalt (Vice Admiral October 1, 1968) took over RADM Veth's job as COMNAVFORV in September of 1968, he proposed an expansion of the turnover plan so that virtually all U.S. Navy operational responsibility in South Vietnam, with the necessary equipment, would be turned over by June 30, 1970. He also proposed that all of the support facilities and bases, as distinguished from the operational units, should be turned over to the

South Vietnamese by the end of the Fiscal Year 1972, or June 30, 1972.

This was the first plan for a massive complete turnover by a U.S. Service, and since it was so large-scale it involved a vast increase in the size and training program of the South Vietnamese Navy (VNN). Of this and the ACTOV program (Accelerated Turn Over to the Vietnamese), more shortly.

On January 19th, 1969, expanded peace talks, involving the North Vietnamese and the National Liberation Front (Viet Cong), had opened in Paris. Henry Cabot Lodge, former U.S. Ambassador to Saigon, headed the U.S. Deputation. The Viet Cong on May 8th offered a ten-point plan to end the war, mainly demanding an unconditional withdrawal of U.S. forces from Vietnam before discussions could begin. At the same time, they launched the biggest attack on our forces since the Tet and Mini-Tet Offensives: 163 Americans were killed in a week.

On May 14th, President Nixon proposed the withdrawal of "major portions" of all foreign forces from South Vietnam in a year. The first concrete action for removal of troops made by the President was on June 8th: He announced 25,000 U.S. combat troops would be withdrawn by the end of August, to be replaced in the field by South Vietnamese troops.

In budgetary terms, President Nixon proposed a $3.5 billion cut in spending for the Vietnam war. On September 16th, the President announced withdrawal of 35,000 more troops. He announced, on November 3rd, that he planned to withdraw all U.S. forces on a secret timetable and asked for the support of the "great silent majority" of Americans.

When VADM Zumwalt was briefed by the OICC in Saigon, he was anxious to find out about the training being given by RMK–BRJ in the building trades—to see how much building of new Vietnamese Naval bases could be undertaken by the Vietnamese. He also was very interested in the housing for Vietnamese Navy families (dependent housing) which the Seabee teams were building. He spoke about the need for "fringe benefits" of Naval family housing near the Naval bases as essential to the building of good morale in the Vietnamese Navy.

When President Nixon took office, he went down the line with encouragement and financial support for Zumwalt's plan to more-

than-double the size of the Vietnamese Navy—from 17,500 men to 40,000. And a year later, in April 1970, the President went down the line again to pick VADM Zumwalt from a "low number" status and boost him to full Admiral and Chief of Naval Operations.

As the Commander of Naval Forces in Vietnam, Zumwalt had turned the Seabees loose with a program of building bases and family housing for the Vietnamese Navy all over Vietnam—along the seacoast and in the river network of the Delta. And furthermore, just as he had expanded the Vietnamese Navy by inserting cadres of skilled U.S. Navy enlisted men in the Vietnamese ranks to give the Vietnamese on-the-job training, he had created his own Seabee Teams to assist in the big building job.

These units were called NAVCATs, short for Navy Construction Action Teams, and they were a wholesale extension of the Seabee team theory. NAVCAT units took Vietnamese shipboard sailors such as firemen and quartermasters and worked them in Teams with experienced Seabees so they could learn carpentry, bricklaying and the electrician's trade while building dependent housing and new riverine naval bases for the Vietnamese.

The inventive and dynamic ADM Zumwalt recalled the highlights of this program in November of 1970:

"When I got to Vietnam in October '68—We proposed to GEN Abrams in November a plan which was originally modified up the line and then, subsequently, revised again to conform to our original plan. The plan submitted in November of 1968 is what we have followed. It called for increasing their Navy from 17,500 to 40,000. We achieved that number in July of this year (1970).

"It called for the turning over of 1,000 small craft. We turned over roughly 750 of them, and will complete almost all of them by December this year (this, too, was achieved).

"It called for the replacement of our logistics (repair and supply) ships, by the construction of a large number of bases. That construction began in early '69 and will be completed in December of this year (1970).

"Our scheme was first to turn over the fighting—second, to turn over the logistics—and third, to up-grade the quality of (Navy) life so that we could count on their loyal support of the government.

"We had to get started in that sequence, just because we didn't have enough people and resources to do everything."

Zumwalt spoke about the plan to increase the amount of protein in the Vietnamese Navy (and dependent) diet, and the breeding of pigs, chickens and rabbits. "Our latest report indicates that we will have achieved a sustaining rate by the middle of 1972. . . . (and they did).

"The dependent shelter program will take longer than that because it's more expensive, but we've finished about 5,500 of the total 23,000 that we need. I feel that it's moving along at such a rate that peoples' aspirations are satisfied, and that we do have their loyal support in the Navy."

ADM Zumwalt said that the dependent houses were built for the prescribed limit of $600 per dwelling, and that the protein improvement plan (pigs, chickens and rabbits) was financed by private money, the Helping Hand Foundation.

The master plan of NAVFORV approved by VADM Zumwalt and RADM Tran Van Chon (CNO of the Vietnamese Navy) called for 33 bases. Of the 33 bases, 11 were designated as Priority A, and the criteria packages for these were put together first.

In the latter part of August 1969, RMK–BRJ was assigned work on several bases: Ben Luc, My Tho, Cat Lo and a pier at Saigon shipyard. Next came Dong Tam and a plant for concrete pontoons.

Zumwalt told OICC RADM Hank Johnson that he wanted the ACTOV bases built as rapidly as possible. Johnson set up a new component of the OICC to give special attention to this new high priority program.

Other Delta ACTOV bases being tackled by the Seabees in late 1969 and 1970 were at Ha Tien, Rach Soi, on the Gulf of Thailand, and Long Phu and Nam Can in the depths of the Delta.

In May 1970 the battalion colors of NMCB 5 ceased to fly at Camp Haskins North in Da Nang and were raised at a new camp (Camp Logan) at Bien Hoa, renovated from an abandoned Army camp. The event marked the first time that a U.S. Naval Mobile Construction Battalion had established headquarters in the Delta region. Also, in that month, Seabees from NMCB 62 were added to the Delta construction force at Binh Thuy, Song Ong Duc, and Chau Doc and later at Tan Chou. In June and July 1970, 150 NMCB 133 personnel reported TAD to NMCB 5 to further augment the Delta construction force, principally in the construction of dependent housing at Thu Duc. NMCB–3 soon joined the Delta operation

at Ca Mau. In October, NMCB 74 relieved NMCB 5 and soon was faced with the task of constructing ACTOV RAD facilities at Mui Dinh and Ta Kou in the heart of "Indian" country.

The Mui Dinh landing was the only Seabee over-the-beach combat-type landing made without support from combat troops during the Vietnam conflict. Both Mui Dinh and Ta Kou were cleared and secured by the Seabees of NMCB 74 and later NMCB 5 without other troop support.

Nam Canh, at the extreme southern tip of South Vietnam, was a swampy fishing (and charcoal-collecting) village which had been overrun by the Viet Cong and almost totally destroyed. The few primitive old roads were abandoned and useless. The area had till this time been left for the Viet Cong and NVA.

The initial building operation at Nam Canh was to install a floating base on concrete pontoons to provide security while the Seabees worked on the shore to build an Advanced Tactical Support Base, called Solid Anchor. But the swampy sands simply weren't up to carrying the loads of a modern naval base—neither the heavy equipment nor the naval base structures. The contractor took over the dredging and fill needed for the base and a 3,000-foot runway.

Eventually, by 1970, Nam Canh was going to need 640,000 cubic yards of fill to support a base and airfield. This meant a fill of three to five feet on most of the base. Also needed were all the resourcefulness and will to fight of the Vietnamese CIDG, RF and PF (Rough Puffs) forces, and the U.S. Navy SEAL detachment to fend off a battalion of VC–NVA swimmer-sappers who were determined to blow up the buildings, ammo and POL stores (and helicopters).

The Nam Canh base eventually had 12 Butler buildings, 41 SEA huts, and a fleet of 39 patrol boats of various kinds, and about 1,000 people in the base population including dependent housing for Vietnamese Navy families built by Seabees.

The operational CO at embattled Nam Canh during the building operation was CDR Tom A. Kelleher, of Salem, Mass. The base commander was CDR Richard Johe of Pittsburgh. The U.S. Marine Commander was CAPT Gill Johnson from Savannah. The Seabees were under the command of LT James S. McGraw, the detail chief sent from NMCB–5.

The concept of "sequential turnover"—meaning on-the-job

training by American crewmen or advisers of Vietnamese Navy trainees—meant the American crewmen on a boat would leave when the students were able to fend for themselves.

Prior to reporting on our boats, the Vietnamese sailors (mechanics, technicians, etc.) were given at least a small acquaintance with English. But we recognized that "show and tell" instruction had to boil down to "show and do".

The first turnover of U.S. Navy boats and equipment occurred on schedule, on February 1st, 1969, when River Assault Division 91 was dissolved and VNN River Assault and Interdiction Divisions 70 and 71 were formed.

By April of 1970, there were no U.S. Navy combat craft in South Vietnam with wholly American crews, and 242 craft, worth more than $68 million, had been turned over to the VNN under the ACTOV program.

Another important aspect of South Vietnam's ability to cope with the stresses and strains of independent nationhood, beyond straight military preparedness, was the ability to build and maintain her own bases and installations.

Fortunately for Vietnam, RMK-BRJ had given approximately 200,000 South Vietnamese training in building skills by December of 1971, when all the contractor's formal training was ended.

The contractor estimated that "informal" (less highly skilled) training had been given to 140,000 carpenters, masons, dredgemen, asphalt workers, oilers, pilebuffs (pile-handlers), warehousemen, etc. Formal, on-the-job training, like that of truck drivers, equipment operators, welders, electricians, mechanics, totalled to 62,000. Because of South Vietnam's large Army demands, over half of the 344 heavy equipment operators, mechanics and welders trained during 1968 were women.

Heavy emphasis on training continued until January of 1971 when the completion date for RMK-BRJ's contract (NBy-44105) was set for June 30th of 1972. A gradual cutting of the training program went on till December of 1971, when all formal training was ended.

The ARVN engineers, starting small, had worked up considerable knowledge and experience by early 1972, thanks to tutelage by Seabees and Army Engineers. As of February of 1972, six ARVN engineer battalions were working on the LOC program. Notable was the ARVN 71st Engineer Battalion, which MAJ GEN Robert

P. Young, the MACV–DC, cited for successfully carrying out "the toughest kind of construction" at Bac Lieu, deep in the soggy Delta on the road to Ca Mau and Nam Canh.

At the ACTOV base at Thuan An north of Hue, one of the first and most successful training programs for ARVN engineers (of the 10th Combat Engineering Group) was carried out by the Seabees of NMCB–22 in 1968–1969.

In Thailand, the Royal Thai Army Engineers, trained by American Army Engineers, were busy in 1971–72 building security roads in the vicinity of Changsai near the Laos border, a vital military project to cut infiltration by North Vietnamese troops and guerrillas attempting to subvert the countryside.

Besides their large road and base-building programs in Vietnam, the Army Engineers, through advisors with the ARVN engineers, assisted in a program to provide dependent housing for Vietnamese Army families. These houses were like those built under ADM Zumwalt's leadership for the Vietnamese Navy: no more than $600 to be spent for each dwelling, but providing a level of comfort which Vietnamese consultants felt was ample. This would seem like "camping out" to the average American family—with a central water tap for each 20 families, sheet-metal roof and five family units in a section built of concrete block.

CHAPTER TWENTY-TWO

The Last Big Job—LOC

In 1969, the first year of President Nixon's administration, began the last of the major construction efforts wrought by the builders of Vietnam, both military and contractor. It was the LOC., or Lines of Communication program, meaning generally roads, with a minor part played by canals and rivers.

Many leaders, both Vietnamese and American, have found this the most important of all the building wonders achieved during this war. The program involved the design and building of a network of asphaltic concrete roads up to the highway standard of the United States before World War II—so-called Class-A highways 24 feet wide with eight-foot shoulders. In the areas with heaviest traffic, the roads grew to 40 feet in width, with the same shoulder—so important in Vietnam for scooter, scooter-bus and scooter-truck traffic.

The work was accomplished despite the frequently determined and deadly opposition of the VC and NVA.

Of this startling achievement, the senior CEC Commander in Vietnam in late 1970, RADM A. R. "Mike" Marschall said: "The more we build the highways, the more we realize that this is the one real key to pacification in the country." Marschall, by the way, became OICC and DEPSEA in February of 1970. He had served earlier as the Commander 30 NCR and 3 NCB in Da Nang.

He pointed out that a good paved road opens up trade and settlement rapidly because a fresh paved road is not apt to be mined. Said Marschall: "I know of no case where a road has been mined that we built to MACV standards. In other words, when it gets a good wearing surface, they (the enemy) just don't mine it. They might mine the shoulder. But in the main roadway, we pretty well block them by giving them a good wearing surface."

RADM Marschall pointed out that the paved roads are also a great aid to security in that police or military forces can move much faster to stamp out guerrilla insurrection.

RADM Enger, the Commander of NAVFAC, said in 1970 that from an engineer's point of view, it might well have been better to have put this network of new roads into Vietnam earlier to have aided not only in rapid military movements, but also in the pacification program.

When, after six years of the war, in 1968, a large program of road-building was launched, (Enger said), "The biggest problem was we couldn't use the roads that were there as they were out of commission. We couldn't even get out on those roads to tear them up to repair.

"We knew that (rock) was going to be one of the critical problems. The people (OICC, contractors, military engineers) were farsighted enough to order a lot of rock-crushers and screening equipment and they were worried until they got enough employees to work the quarries, and they finally solved the problem."

The Army officer who became MACV Director of Construction in June of 1970, BRIG GEN Robert M. Tarbox, also felt the great force in pacification was road-building.

He said: "It's been found through experience that you get a road back into the country and give a man a chance to carry his goods to the market, get the buses back in there so people can travel—and the VC are just driven out. They thrive in isolation, where they can control the population and when the population acquires mobility and when the Armed Forces can move in to contest with the VC, they'll drive them out. The VC can't exist.

"I've flown all over this country and every place you go, as you see the roads being built, people are building homes right along with them. They keep pace with them and the homes are there before the roads are finished. The troops have gone and you can just see by the number of shiny tin roofs that are going up, the progress of the road."

A study of the RVN highway system by Transportation Consultants, Inc. of Washington, D.C., conducted for USAID, showed the sad shape of disrepair in the road network. The study emphasized that the design and maintenance standards of the (RVN) Directorate General of Highways (DGOH) were not adequate for modern traffic.

The total effect of the report, in clear and concise English, was that roads of Vietnam were in bad shape and they needed modern redesign.

In specifics, the survey showed that there were 12,444 miles of roads in South Vietnam, of which 3,959 miles were national and interprovincial, and 8,485 miles were feeder or distribution roads.

The survey also showed there were 4,527 bridges, generally pretty short, since their aggregate length was only 61.5 miles.

The LOC plan, besides a reconstruction and update of the road net, called for a rebuilding of the railroad system. The Vietnamese Railway System is a one-meter (39.4 inches) gauge track (narrower than the standard gauge of the American railways) with about 700 miles of mainline. The railway roughly parallels the course of Route 1, running north from Saigon to Dong Ha and the DMZ.

USAID provided about $15 million to restore the railway and assigned responsibility for this to the RVN. The program, despite frequently determined counter-efforts by the Viet Cong, was completed by mid-1972. Only a few sections of track had not been restored, like that running north from Hue toward Quang Tri and Dong Ha.

The half-billion-dollar LOC program in 1969 was centered on the Saigon network, a main service road into the Delta, and a series of roads up the coast northward. In 1970 the emphasis for both the contractor and military engineers was on the highlands network and completion of the coastal routes. The final phase in 1971–72 completed inland segments and branched out in the Delta—and turned over heavy equipment to the embryo ARVN military engineers.

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RADM Bartlett was relieved by RADM John G. Dillon in March 1969 as the Commander 3rd Seabee Brigade. In August, Bartlett became RADM Enger's Vice Commander as he relieved RADM Husband as NAVFAC Commander. Husband retired.

RADM Dillon tackled the Seabee program in I Corps for 1969 and 1970 with an ingenious graphic control device which gave

him and his commanders an instant gauge of common progress and needs.

He said: "I developed what was to be called 'that damned Chinese Scroll'. . . . which depicted all of the highway on a five-foot strip of paper, ten inches wide, showing the four operations—grade, rock, first lift and second lift. . . . This also showed the Mile Station, landmarks such as bridges and the area of assignment by battalions.

"I kept the master (scroll) on my window ledge. The Regimental Commander kept his. Each battalion kept one for their portion of the road. So when the nightly reports came in on the Seabee Radio Network, we could all plot and see where we were. Additionally, there were nightly reports of quarry production, rock offloading, and major plant status.

"The next morning by 6:30, the Regimental Commander could make adjustments in the assignments for the day depending on equipment availability, weather, tactical situation, a crusher being down or an asphalt plant being down. Thus, through this display and his direct knowledge of all the equipment availability, he could run the entire operation as a single integrated operation rather than five battalion operations. If one battalion was tied up for lack of a key piece of compacting equipment, he could quickly switch their operations to support another battalion, or borrow from another battalion the right piece of equipment."

The first Seabee road building program was completed on schedule (finished by October 1969), despite determined VC and NVA opposition in some sections. One of the toughest sections was QL–9 west of Dong Ha, the 20-mile stretch to Ca Lu. When the enemy saw that the road was nearing completion, they laid forests of mines in the unpaved part.

Each morning the Third Marine engineers swept the road for mines, before work could begin. One day the Marine minesweepers found 43 mines in one two-mile section.

One seven-mile section west of Khe Gio Bridge was a thorn in the side of MAJ GEN William K. Jones, the Commanding General, Third Marine Division. GEN Jones was very anxious to have a paved and finished road here because it was a vital link to the Vandegrift Combat Base. From Vandegrift, the Marines were stalking NVA regiments that had come in from the Laotian border.

The Commander of the 32nd Regiment, Seabee boss of the area, CAPT Albion W. "Bill" Walton, Jr., brought the biggest road-building equipment to NMCB–62, doing the job in this section. He worked closely with the skipper of 62, CDR John Paul Jones, about the need for quick building action here.

The Marines provided a full regiment to give security to this high priority job. Said RADM Dillon: "Considerable emphasis was given this seven-mile section which they graded and paved in a matter of six weeks. This would have been a full year construction project under normal conditions, say by contract, in the United States." Dillon had words of high praise for the Marine security force: "You see, the Seabee working on a heavy piece of equipment, his eyes on the road, is totally vulnerable to a sniper or to any kind of attack by fire. He can't hear because of the noise of the machine. He can't take his eyes off the work. He can't even hear an incoming round that lands nearby. Instead of wearing flak-jackets, a lot of them took off their shirts and got a suntan in the process. They had that much respect for the Marines. In the meantime, the Marines respected them for their coolness and calmness."

The first section of Seabee road-building scheduled to be finished was 130 miles of old, narrow and ruined or abandoned French Highway, Route 1. Route 1 was now known to the Vietnamese as QL–1, an abbreviation of the Vietnamese words for National Highway.

The Seabee work started at Lang Co, just north of the formidable Hai Van Pass, and 20 miles north of Da Nang. Hai Van, which in French colonial days was known as Col de Nuages, or Neck of the Clouds, was formidable both geographically and in the tactical sense—plenty of VC opposition. The old and battered highway was mostly one way on both sides of the 2,000-foot peak, and the heavy roadmaking equipment to be used by the five Seabee battalions had to come up from Da Nang.

The plan was to build the road from Lang Co, 86 miles north to Dong Ha, then 20-odd miles west from Dong Ha to the Vandegrift Combat Base, QL–9. Another section of Seabee branch road, from Hue east to Tan My, would have to be resurfaced.

One of the largest supply problems which had to be planned and solved in advance was the supply of crushed rock and asphalt. Seabees had quarries, crushers and asphalt plants at Cam Lo,

Vinh Dai, and Phu Loc—also at Ca Lu, Nam Hoa and Quang Tri. Work crews were to be sent to these quarry sites from the five battalions of the 30th Regiment at Da Nang. The grading and embankments were to be accomplished by details of the five battalions of the 32nd Regiment headquartering at Hue-Phu Bai. Thus ten battalions (all there were in Vietnam in the spring of 1969) were to be involved in this, the biggest single job of the Seabee battalions during the Vietnam war.

For rock, estimates were that 1.8 million tons would be required. Of this, 1.2 million tons would come from northern (I Corps) quarries. The remaining 600,000 tons would have to be barged up from the more prolific southern sources to Hue and Dong Ha.

During the massive road-building effort on QL–1 and QL–9, the ten battalions had taken frequent bombardments by enemy rocket and mortar fire in their camps, and especially in the vicinity of the five new quarries in northern I Corps. The Seabees, like their Marine guards, had taken frequent casualties.

There were occasional cases of bloody bad luck despite battle wisdom. On May 9th, 1969, a heavy rocket attack hit the NMCB–40 camp near Phu Bai asphalt plant. Two Seabee Chiefs' huts were hit and demolished—and 16 Seabees wounded—two of these so badly hurt that they had to be med-evacked.

On June 19th, a large mortar attack hit the Phu Loc quarry site. A total of ten Seabees from NMCBs 5 and 9 were wounded.

On June 29th, at NMCB–62's camp, a heavy rocket attack hit Dong Ha—three Seabees wounded.

On June 30th, NMCB–62's EO3 Glenn C. Ludban was killed when he detonated an anti-tank mine on Route 9 west of the Khe Gio Bridge. He had been following a Marine sweep team and was investigating a blown culvert.

The same day, same locality, the driver of a five-ton dump truck was wounded when his vehicle hit a mine and was destroyed.

Two days later, July 2nd, same locale, an NMCB–62 dozer was badly damaged and the operator was wounded when his vehicle hit a mine.

On August 12th, an enemy rocket hit a berthing hut in the camp of NMCB–40. BUCN R. A. O'Connor was killed and nine others wounded.

By the time Rear Admiral Dillon assumed command of the Third

Naval Construction Brigade a new order of things in the conduct of the Vietnam war had emerged; it was Vietnamization. And while not stated, this implied that a day would come, in the not too distant future, when the construction by Seabees would be completed. With this in mind, he reviewed the overall status of the Third Brigade construction materials. This review prompted him as a first act to require that the construction materials in the custody of the individual Seabee Battalions be inventoried and excess materials returned to the Brigade material yard, and the damaged or unusable materials surveyed. His philosophy in this action can best be summarized by an excerpt from his directive to the two Regimental Commanders: "I know that our responsiveness at battalion level is a function of material availability. This I do not wish to destroy, I merely desire better material management and turn in of excesses. Eventually we are all going home; I don't want that day delayed because we didn't prepare for it." This philosophy was to become the guideline for all future actions taken with respect to the Brigade, the two Regiments and the attached Construction Battalions.

Concurrent with the inventory actions and return of excesses to the Brigade material yard, all outstanding Brigade requisitions for materials valued in excess of $10,000 were screened to insure that they met valid requirements for ongoing construction. After the inventories were completed and excesses to construction requirements determined, a list of these excess materials and quantities were provided to COMNAVFORV REP, Da Nang for use in influencing design of new facilities in order to maximize the use of excess materials. Concurrent with this action, Brigade resupply limits were reduced from six months to four months "on hand" stock and replenishment requirements were reduced accordingly. Major items of equipment such as large pumps, air conditioners, etc., were restricted to "order as needed".

By June 1969, a review of future construction requirements was well underway by the major commands supported by the Third Brigade. These commands were the Third Marine Amphibious Force and the Army's XXIV Corps. At the same time every effort was being made to determine the construction requirements of the Vietnamese Army and Naval Forces under the Vietnamization program.

As a result of these reviews and the ensuing conversion of firm construction requirements into Battalion months of construction effort, it became evident by early August 1969 that the effective construction capability of the ten Naval Construction Battalions in Vietnam could not be sustained by the on-going work load forecast. Accordingly plans were formulated for the orderly redeployment of five Construction Battalions and one Regimental staff. It was at this time that the President announced his intention of troop reductions in Vietnam and accordingly the Seabees Battalion phase down was dovetailed into the President's troop reduction plans.

Actions continued to limit stock levels and materials on order to support the assigned and ongoing construction projects. Battalion material yard inventories were integrated into the Battalion inventory system. This action allowed for the orderly transfer of materials from one Battalion to another in support of their respective construction assignments. In addition the CBC Port Hueneme "Hold" program was initiated. Under this concept materials procured in CONUS were received and held at CBC Port Hueneme for screening by the Third Brigade prior to shipment to Vietnam. This procedure insured shipment of only those materials which were required to meet on-going construction projects. Likewise material procurement which had been cancelled by the Brigade too late to stop their shipment from the supplier were held at CBC Port Hueneme pending shipment instructions from the Third Brigade. At the peak of this program about $2,000,000 in construction materials were on hold at CBC Port Hueneme.

Planning continued for the ultimate redeployment from Vietnam of five Construction Battalions and one Regimental staff. Actions inherent to this redeployment provided for the closing of five individual construction battalion camps, and the relocation of construction materials from them to other Battalions or to the Third Brigade material yard in Da Nang. Also this entailed the closing of two rock quarries and crusher sites as well as three asphalt plants. The plan called for the redeploying Seabee Battalions to retrograde organic construction equipment at the time of the Battalion redeployment. Battalion redeployments commenced in late September 1969 and by early December were completed. It was at this time the 30th Naval Construction Regimental

Headquarters was redeployed from Vietnam to Okinawa and the 32nd Naval Construction Regimental Headquarters moved from Gia Le to Camp Haskins near Da Nang. Planning then commenced for the ultimate phasing of the Third Brigade responsibilities into the 32nd Naval Construction Regiment and the subsequent redeployment of the Third Brigade from Vietnam.

By early 1970 the phase down of the Third Naval Construction Brigade was in its final stages and plans finalized for the Brigade functions to be assumed by the 32nd Naval Construction Regiment on 1 March 1970. While there did remain a Brigade Commander in Vietnam, this function would be performed as an additional duty of the Officer in Charge of Construction, Vietnam as was the case during the early days of the Vietnam build up. The foresight exercised by Rear Admiral Dillon in formulating a material management program and personally supervising its execution resulted in the savings of many millions of dollars that would have otherwise been spent for the procurement of unneeded construction materials. A conservative estimate of these savings is $25,000,000. Brigade phase down concluded on 4 March 1970 when Rear Admiral John G. Dillon, CEC, USN, was relieved as Third Brigade Commander by Rear Admiral A. R. Marschall, CEC, USN, at Camp Haskins, Red Beach, Da Nang.

The major effort of the Seabees during the phasedown period 1970–1971 shifted to construction of facilities of a permanent nature in the continuing support of the Vietnamization Program. This effort centered on completing the road and shoulder work on QL–1 north and south of Da Nang, permanent bridge and airfield construction, and the erection of pre-engineered buildings for the Forces Structure Increase (FSI) Program to upgrade the capabilities of the Regional and Popular Forces.

The bridge construction effort included railroad bridges and permanent and timber bridges, primarily on QL–1. For example, the Seabees of NMCB–11 camped out in a no-mans land on the Perfume River approximately 10 miles northwest of Hue to replace the railroad bridge which had been blown by the Viet Cong. They were hampered by a combination of weather, flood waters and the Viet Cong, but managed to raise one of the spans that had been destroyed and replaced the second with a new span. Three Seabee battalions were involved in the construction of three major con-

crete and steel highway bridges in QL–1: NMCB 62 at Dong Ha, NMCB 74 at Cau Do (just south of Da Nang) and NMCB 10 at Quang Tri. The bridges at Dong Ha and Quang Tri were subsequently destroyed during the North Vietnamese invasion of 1972.

The construction of the FSI cantonments, especially in Thua Thien province around Hue, strengthened the local forces and enabled resettlement of the "Street Without Joy" area between QL–1 and the coast. The military/civilian air field at Phu Bai was upgraded and resurfaced in April 1970 in a 24 hour per day effort without interruption of its vital military support mission.

The Seabees from NMCB 5 resurfaced the steep, winding and heavily travelled section of QL–1 through the Hai Van pass in 1970, meanwhile the men of NMCB 62 were improving LTL–4 while being constantly harassed by the Viet Cong by sniping incidents and numerous mines.

The latter part of 1970 saw continuing redeployments of the battalions back to their home ports. Captain Ken Sears (now Rear Admiral) relieved Captain Jack Washburn as the 32nd Regimental Commander in August 1970 and guided most of the remaining phase-down of Seabee effort in the First Military Region. NMCB 10 departed Gia Le in September 1970 and ended Mobile Construction Battalion presence north of Da Nang. The remaining battalions redeployed to CONUS, leaving the Regiment and NMCB 5 at Red Beach in Da Nang. The Regiment and NMCB 5 closed out their efforts in the First Military Region in early 1971. Captain Bill Zobel relieved Captain Sears at the Regiment's new home in Saigon on 1 December 1970.

* * * * *

The RMK–BRJ efforts on LOC continued throughout South Vietnam until the end of the field construction activity in May 1972. As of January 1970 the contractor had completed 603 kilometers with approximately 519 on the schedule. By the time the program was complete the total was 1047 kilometers plus hundreds of small bridges. The bridge program was notable in itself, par-

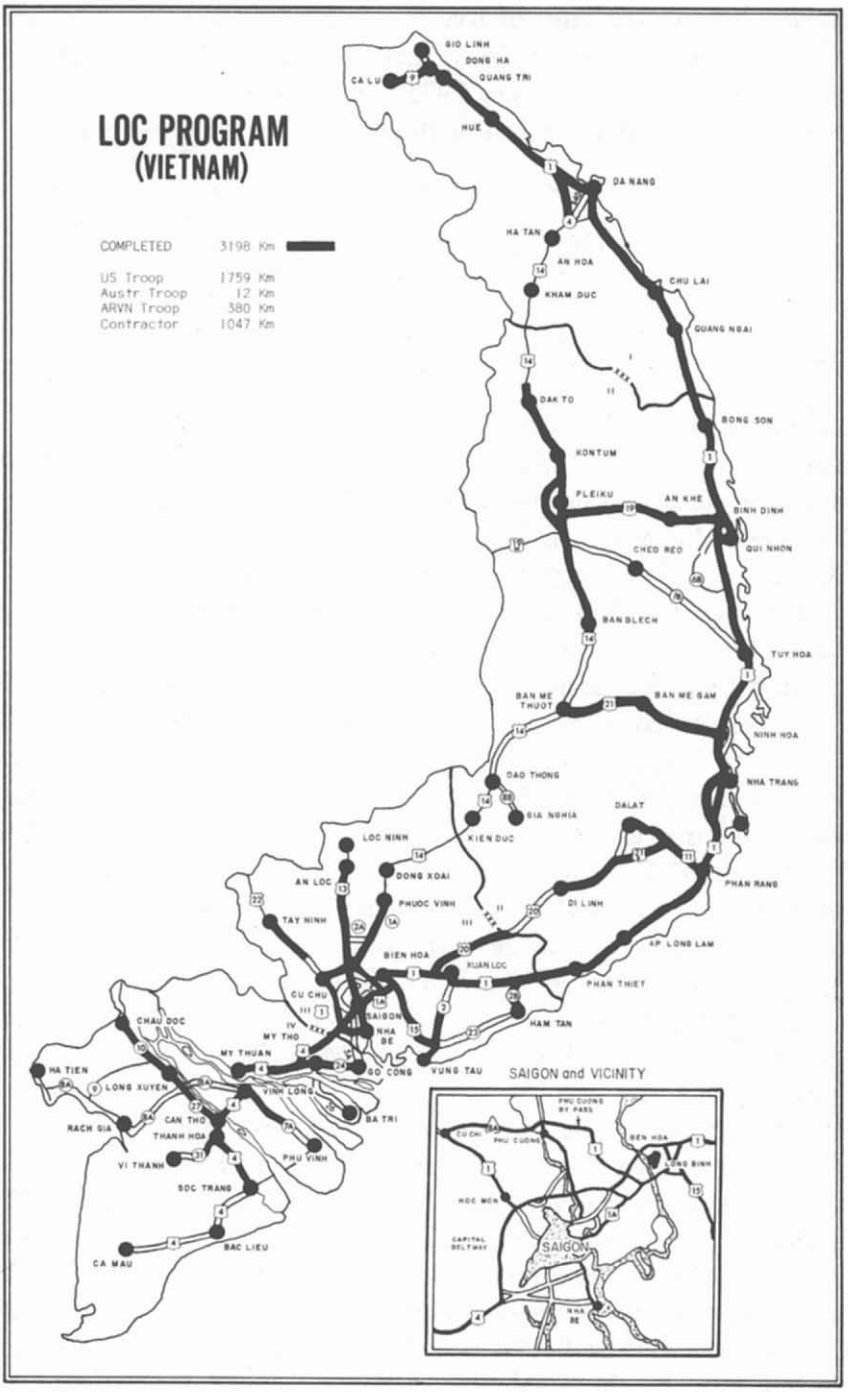

LOC PROGRAM
(VIETNAM)
COMPLETED 3198 Km
US Troop 1759 Km
Austr. Troop 12 Km
ARVN Troop 380 Km
Contractor 1047 Km
GIO LINH
DONG HA
QUANG TRI
CA LU
HUE
DA NANG
HA TAN
AN HOA
CHU LAI
KHAM DUC
QUANG NGAI
DAK TO
BONG SON
KONTUM
PLEIKU
AN KHE
BINH DINH
CHEO RED
QUI NHON
BAN BLECH
TUY HOA
BAN ME THUOT
BAN ME SAM
NINH HOA
DAO THONG
NHA TRANG
GIA NGHIA
DALAT
LOC NINH
KIEN DUC
AN LOC
DONG XOAI
PHUOC VINH
PHAN RANG
TAY NINH
DI LINH
BIEN HOA
XUAN LOC
AP LONG LAM
PHAN THIET
CU CHU
SAIGON
NHA BE
HAM TAN
CHAU DOC
MY THUAN
MY THO
HA TIEN
GO CONG
VUNG TAU
LONG XUYEN
VINH LONG
BA TRI
RACH GIA
CAN THO
THANH HOA
PHU VINH
VI THANH
SOC TRANG
BAC LIEU
CA MAU
SAIGON and VICINITY
PHU CUONG BY PASS
PHU CUONG
BIEN HOA
VUNG TAU
HOC MON
CAPITAL DELTAWAY
SAIGON
NHA BE

FIGURE 26

ticularly the construction of five major bridges near Saigon. These bridges were all started in May through July 1971 and were completed in March through May 1972. The following tabulation indicates the scope of this portion of the contractor LOC program.

Location	*Length*	*Cost*	*Start*	*Finish*
Tan An	1343′	3,400,000	1 Jun 71	25 Mar 72
Ben Luc	1738′	3,523,000	9 Jul 71	29 Apr 72
Binh Lai	1819′	3,600,000	29 Jul 71	24 Apr 72
Bien Hoa	2654′	4,783,000	15 May 71	1 May 72
Binh Phuoc	1587′	4,496,000	11 May 71	27 Apr 72

The total value of the contractor LOC effort was $300 million. As it progressed it was subject to many changes and many delays. Real estate acquisition procedures were particularly cumbersome and to keep the program moving a joint Government of Vietnam, OICC and MACV committee was formed and met weekly. This focused top level attention on problem areas and the GVN arranged to have the land required cleared on or ahead of schedule.

In early 1970 the large bridge building requirement was foreseen and it was decided to develop a series of standard designs to reduce design costs, simplify construction and save time. The standards covered bridge decks, 40, 50, 60 and 70 single and double T-beams, pre-stressed concrete piles, pier protection and security lighting and abutments. Design costs averaged 1.5% for the total bridge program as a result of this standardization effort.

In July of 1970, the largest amount of monthly Work-In-Place by the contractor was at the SUMPCO quarry, the largest in the nation, reflecting the needs of the road-building program. The biggest backlog of work was also at SUMPCO quarry, $28.9 million for that contractor's gold—rock.

On the section of QL–1, between Nha Trang and Qui Nhon, the contractor road workers had set a brave record of "Can Do" achievement despite severe harassment by Viet Cong and NVA.

In the strip of road between Chi Tanh and Song Cau on March 24th, 1970, the RMK–BRJ Project Manager K. W. Larson was killed by a mine, three miles north of Chi Tanh. At the same time, a Vietnamese well-driller was killed and another badly injured. The same month, three soldiers of the Korean security force were killed guarding the Chi Tanh installation.

In the next two months there were three more casualties among the RMK–BRJ superintendents on that road: at Chi Tanh, Jack Crim by another mine; M. A. Quisenberry shot off his scooter in an ambush five miles south of Tuy Hoa; and Patrick Comer wounded in a mortar attack on the RMK–BRJ camp at Chi Tanh. It was no wonder that Chi Tanh was known to the constructors as "Dodge City".

Probably the most daring contractor feat in the LOC program was the rebuilding of 118 kilometers of QL–19 between 35 kilometers east of An Khe toward Qui Nhon to 55 kilometers west of An Khe toward Pleiku. This road was in enemy territory. Work started in January 1971 with the building of the contractor's camp and installation of rock crushers and an asphalt plant. Highway work began in earnest during March. April saw a sharp increase in hostile activity and an increasing number of Army convoys through the mountainous An Khe Pass. Seven days of crusher operation were lost due to 2 direct rocket hits on the plant. A third rocket hit the generator shed knocking power out for a half day. Two other rockets hit the site, all with only slight injury to a security guard. Equipment losses included an asphalt distributor run off the road by an ARVN convoy and a Gradall hit by a rocket. Good progress was made during May. On June 12 contractor forces were caught in an ambush on a military convoy in An Khe Pass. Two OICC inspectors were killed and 3 RMK–BRJ employees were wounded by rocket and rifle fire. In spite of enemy activity good progress continued to be made. In July an additional 28KM of road between An Khe and Pleiku were assigned to the contractor to permit stand down of the 20th U.S. Army Engineer Battalion. Inclement weather started in October but good progress continued to be made through to the end of the year with 50% completion of the 83KM An Khe-Pleiku section and 98% completion of the An Khe east section of 35KM.

In the swampy Delta, where rock was much scarcer than in the rest of the country, emergency measures had to be taken. The Delta Rock Agency was established in a partnership of efforts by RVN government, RMK–BRJ, and U.S. Army and ARVN Engineers.

All these sources put rock into the system from their quarries. There were 13 quarries contributing at peak effort. The rock was barged to off-loading spots and trucked to building sites.

During the spring of 1972 as all field construction was drawing to a close the OICC contractor team was constantly shifting key people and equipment to bring the critical LOC and bridge program to this end while the contractor simultaneously was closing job sites and camps, reducing the labor force, removing equipment from service and consolidating the left over materials. The preparations for a rapid closeout were well underway while the final field work was being completed.

The role of the builder during these days of intensive road building, civilian and military, was well summarized by a Seabee on a site 23 miles south of Da Nang, at a hotly-contested area called Hill 55, near Hoi An.

One of the master chiefs of NMCB–62 told us about a young Equipment Operator Third Class, John I. Kuenstler, who had been blown up three times while driving his bulldozer on the road project. The second time, he had been badly injured and had been on his way back to the United States for reassignment.

But during the slow progress through military hospitals back to the United States, he had written back to his Senior Chief in Vietnam and asked for help. With everything set for his return to peaceful, comfortable and safe duty back in the United States, he wanted to get back to his outfit there at Hill 55.

And he had made it. His superiors at 62 helped, and requested his return and he passed the physical and got back to Hoi An.

When we saw him, he had recently hit another mine on road LTL–4 with his bulldozer and it had badly bent his blade and vehicle, but he was still enthusiastic about the road-building job.

Kuenstler was lean, dark moustached, intent, and 24 years old. He was a sometime cowboy and college student from Artesia Wells, Texas, and he was saving his pay to go back and finish his education. He said—and this remark seemed to epitomize the spirit of our builders in the Vietnam war:

"This is the best job there is. You can see what you're doing. First it's grass and a path. Then you widen it and up-grade it, and make it bigger and better."

CHAPTER TWENTY-THREE

The Closeout and the Legacy

Vietnamization, including the heavy highway and military base-building effort which had cost about $700 million in 1969–72, successfully passed its first major test—the NVA Easter Offensive of 1972. The total number of U.S. forces in South Vietnam had declined to less than 50,000 (all Service forces except for about 1,000 military advisors) by mid-June of 1972.

The withdrawal of American building troops—military engineers and those Seabees-without-uniform, the contractor forces—had proceeded more or less steadily from 1970 onward, as the Vietnamese effort progressed.

* * * * *

RMK–BRJ experienced many phase-down exercises during the life of the contract. The first planned completion date for the contractor's efforts had been way back in mid-1964, when the original scope was finished and jobs were few. Then soon after, in August, the Tonkin Gulf excitement changed all this.

Over the years, the contractor grew used to the cycles of boom and reduction. The end next had appeared to be in sight in 1966. That was the time of the largest contract force (more than 50,000), and a $40 million monthly Work-In-Place level.

Then, at the time of the highest acceleration and production, a study of program costs and anticipated funds led to a planned phase-down of personnel to 12,000 by July 1967, and a close-out of the contract by the end of 1967.

But in May of 1967 the OSD decided the cut-back was too precipitous. The level was changed to 15,000 employees and phase-out for April 1968. As the Level of Effort system took hold and additional building requirements were approved, close-out was set back indefinitely.

The contractor work force stayed at the level of about 15,000 from mid-1967 to early 1968. Then the Tet Offensive and the LOC program forced an acceleration of work again—up to 25,000 workers by April 1968.

In the last half of 1968, as the Paris Truce Talks boosted hope of war's end, close-out thinking again affected the plans for the contractor. T-day (Truce Day) planning soared. Extensive plans for returning materials and equipment to the U.S. were developed. The immense job of "retrograding", or salvaging and transporting our billions-of-dollars worth of war equipment and buildings was analyzed. Of this huge problem we will write more soon, as we reach the final "Close-Out" phase in 1972.

In early 1970, Rear Admiral Enger and his top planners at NAVFAC Headquarters looked forward to the ultimate closeout of Contract NBy-44105—the RMK-BRJ contract. The normal practice in closing out a big cost reimbursable contract would not work in Vietnam. The usual practice is to make a complete accounting of all work and costs at a specific point in time and then to negotiate a fixed price with the contractor for all remaining work. This permits a fairly rapid reconciliation of all questions which may exist between the Navy and the contractor. This was the method followed successfully at the end of the large Spanish Bases Program in the late 1950s.

But the wartime conditions in Vietnam would not permit the fixed price completion of the final work. Admiral Enger was also concerned that the sheer magnitude of the RMK-BRJ contract would result in a monumental closeout task, particularly if it had to be done in a hurry.

The solution was a plan to close out in stages. The OICC and the contractor would analyze all completed contract work and the related change orders to the contract to reconcile any questions on the work performed, the estimated costs upon which fee payments had been made, and actual costs which were the basis for reimbursements. As a result of this, the Phase I closeout covering

approximately $1.3 billion was completed in May 1971 and forwarded to the Defense Contract Audit Agency for review. Thus, this much would be out of the way in the future.

The close-out planning of OICC and the contractor was handled by an expert at close-outs, RADM Foster M. Lalor. Lalor, who relieved RADM Marschall as OICC in Saigon in February of 1971, had officiated in the same kind of effort in Thailand in 1969–70. He was the last Admiral to hold the OICC job in Vietnam. He was relieved by CAPT Robert F. Jortberg, who directed the final stages of the close-out, including the disposition of excess material, equipment and construction sites. This was Jortberg's second Vietnam tour. He had served earlier as the Chief Staff Officer of the 30th NCR under CAPT Marschall. He had also relieved RADM Lalor once before, as the NAVFAC Southeast Asia Program Coordinator, in July 1967.

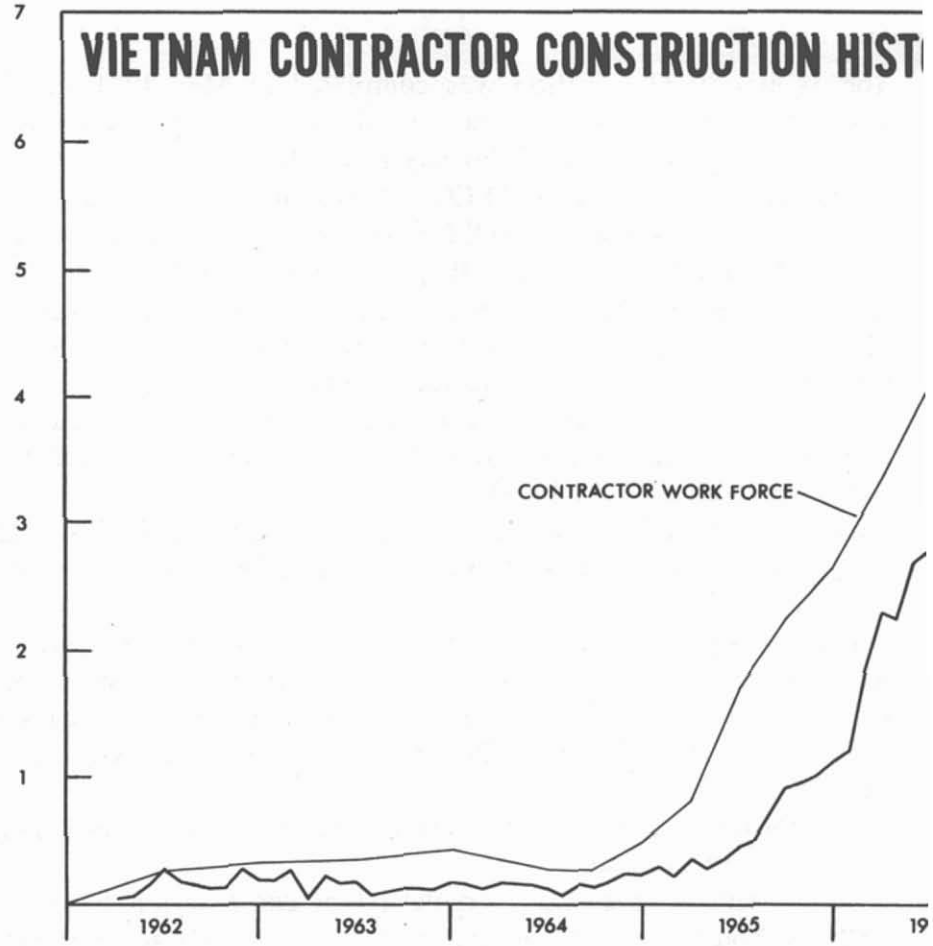
Phase I was so successful that a Phase II analysis was started as soon as Phase I was finished and in November 1971 another $227 million was tied off. In each case, the contractor executed a release of further claims against the Navy growing out of the work covered by the two phases.

RADM Lalor recalls his first actions after the construction completion date had been set:

"Our primary goal was completion of construction by July 1, 1972. In March 1971, however, with 16 months to go, we looked forward to a need to complete about $200 million worth of construction.

"So we went out with a message to all of our customers incountry and said, in effect, 'The time has come to fish or cut bait. If you want RMK–BRJ to build something, get the project into our hands not later than 1 May. Furthermore, we need by that same date precise scope, dollars, criteria and, in effect, for everyone to get out of our way so we can build the project and not debate it to death.'

"The Services, our customers, did a hell of a fine job; essentially we made that first deadline. We had the firm program, as OICC, but RMK-BRJ couldn't build a program that was in my hands. OICC had to get it designed and issued to him by a Notice to Proceed. So our second goal was to design and NTP all projects by 1 June.

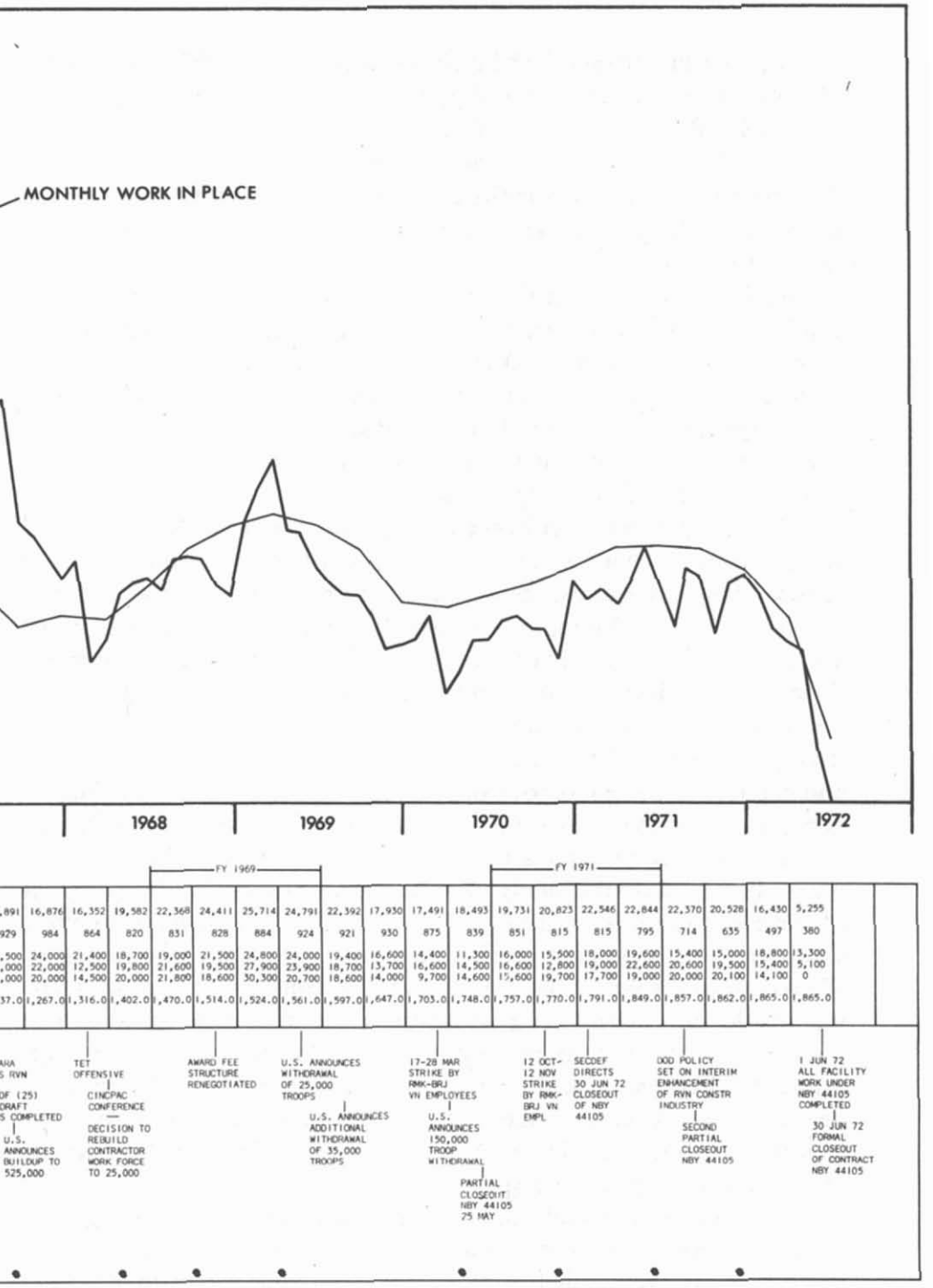


			FY 1963									FY 1965								
CONTRACTOR WORK FORCE	117	2,320		3,040		5,246		4,035		2,550	2,810	3,946	8,038	17,000	22,312	26,515	33,799	41,286
OICC STAFFING	19	56		84		84		90		90	90	92	108	135	202	280	325	590
"WORK IN PLACE" VALUE (IN THOUSANDS OF $)	300	600 1,600 2,500	1,700 1,200 1,000	1,000 2,700 1,900	1,600 2,600 3,000	2,100 1,300 1,500	600 900 1,000	1,000 1,000 1,700	1,300 1,000 1,400	1,600 1,400 1,000	600 1,200 1,100	1,700 2,100 2,100	2,900 2,000 3,500	2,700 3,400 4,300	5,000 7,000 9,000	9,500 10,000 11,000	12,000 18,000 23,000	22,500 27,000 28,000
CUMULATIVE CONTRACT VALUE (IN MILLIONS OF $)	22.2					54.0				70.3				108.9	226.8	241.0	425.0	550.0

SIGNIFICANT EVENTS

- 19 JAN 62 RMK AWARDED CONTRACT — 22 JAN 62 CHANGE FROM ROICC (EST FEB 61) TO DOICC
- PLEIKU RUNWAY COMPLETED
- AMMO FAC AT TAN SON NHUT COMPLETED
- AC & W DANANG COMPLETED
- BIEN HOA RUNWAY COMPLETED
- REPAIRS TO PARKING APRON "C" AT TAN SON NHUT COMPLETED
- TONKIN GULF INCIDENT BOMBING RESOLUTION
- BOMBING OF NORTH BEGINS
- FIRST U. S. COMBAT TROOPS IN VIETNAM 9 MAR 65
- McNAMARA VISITS RVN — U.S. ANNOUNCES TROOP BUILDUP — SEPARATE OICC RVN OFFICE EST'D — $ 1 BILLION PROGRAM ANNOUNCED — BRJ ADDED TO CONTRACT
- RMK-BRJ INITIATES FORMAL TRAINING PROGRAM — $ 200 MIL ADVANCE BUY AUTHORIZED — DIRCON'S EST'D — MACV DC EST'D
- CPFF CONTRAC REVISED TO CPAF — CONTRA ADP EQ INSTAL COMPLE

● PRINCIPALS MEETING



,891	16,876	16,352	19,582	22,368	24,411	25,714	24,791	22,392	17,930	17,491	18,493	19,731	20,823	22,546	22,844	22,370	20,528	16,430	5,255
929	984	864	820	831	828	884	924	921	930	875	839	851	815	815	795	714	635	497	380
,500	24,000	21,400	18,700	19,000	21,500	24,800	24,000	19,400	16,600	14,400	11,300	16,000	15,500	18,000	19,600	15,400	15,000	18,800	13,300
,000	22,000	12,500	19,800	21,600	19,500	27,900	23,900	18,700	13,700	16,600	14,500	16,600	12,800	19,000	22,600	20,600	19,500	15,400	5,100
,000	20,000	14,500	20,000	21,800	18,600	30,300	20,700	18,600	14,000	9,700	14,600	15,600	19,700	17,700	19,000	20,000	20,100	14,100	0
37.0	1,267.0	1,316.0	1,402.0	1,470.0	1,514.0	1,524.0	1,561.0	1,597.0	1,647.0	1,703.0	1,748.0	1,757.0	1,770.0	1,791.0	1,849.0	1,857.0	1,862.0	1,865.0	1,865.0

FIGURE 27

"Again a fine team effort by the customers, the OICC,the A&E's. On June 1, I was able to tell John Kirkpatrick (the veteran boss of RMK–BRJ): 'Here it is! Build it!'

"I confess that a lot of the designs were what we would call 20 percenters. But John for the first time could start figuring out the equipment, the manpower, and the material he needed to build the rest of the job.

"With the 1 June deadline under our belts, the next target was 1 July. By then, John came back to us with his first picture of the scope of our effort from then through final closeout: a series of requirements plans for Vietnamese work force, US and TCN work force, equipment, material and industrial sites. Obviously, this was a first rough cut, for the design was still being completed and changes continued right up to the end.

"Having become accustomed to 30-day intervals between our successive milestone targets, our next goal was to develop an asset release plan by 1 August. Both John and I realized from the outset of our planning for closeout that building would be our easiest chore and that orderly disposal of residual assets—construction equipment, depots and industrial sites would be the most difficult challenge, one not completely within our unilateral control and one which, if not planned and initiated early, could destroy the effectiveness and economy of the closeout operation. Again, the initial 1 August version of our asset release plan was crude; obviously, its accuracy was at the mercy of our still imprecise designs and other unstable plans. But it gave us a fairly accurate order of magnitude statement of both the scope and the timing we would need to meet to effect an orderly and prompt disposition of sites, equipment and material. We recognized that, if we did not achieve timely disposal of assets, we would be perpetuating overhead costs and missing a golden opportunity for maximum economy. Just to give an order of magnitude to this, we looked forward to disposal of over 7500 pieces of heavy construction equipment, then hard at work throughout the country. Again, with 11 months to go, we had $38 million worth of materials, supplies and spare parts. Most would be used but the residual inventory would need to be passed on to some other agency.

"From then through closeout, we had all of the broad management systems we needed. Our cost-to-complete-versus-funds-held; our work schedule, project by project; our requirements plans

in manpower, equipment, material and worksites; and our disposal plan. Obviously interlocked, these plans were constantly updated and refined as we, OICC and contractor, jointly drove toward closeout."

At the time of the interview (February 1972) with RADM Lalor, the weatherbeaten RMK–BRJ General Manager, John A. Kirkpatrick, spoke about the next step in the close-down beyond the demobilization of the heavy equipment and materials.

"The thing that is going to determine how soon we can get out of this business is how soon we can be relieved of the responsibility of property.

"Once we have been relieved of the responsibility of property, then we can start closing our books. But until that date, you not only have to keep your books open, but you have to keep personnel available who are familiar and knowledgeable about all this property."

Kirkpatrick said his biggest problem in shutting down operations would be "to get people out of here and dissipate this organization.

"This is a kind of a sad thing, you know. We have organized a real going organization here. I think one of the most efficient construction organizations that has ever been put together.

"I'm very proud of the fact that studies we make show that in spite of the conditions under which we work—I'm talking about in some areas they're insecure, and I'm talking about others that are isolated as hell and they're scattered all over the country—that we are performing work at a cost that is equal to or less than costs for work in the United States.

"During the course of a long construction program like this, you make associations and friends and it takes some real tough action on the part of top management to get these guys to get rid of these friends of theirs, get them off the payroll. You have to set down hard-and-fast rules."

The big part of the RMK–BRJ effort at this stage was still LOC—roads and bridges. The RMK–BRJ highway work around Saigon centered on five large bridges and several by-pass roads so that trucks bound north or south could avoid the fast-increasing congestion of the Capital City—which could be virtually impenetrable on certain main streets at rush hours, despite a studiously-devised network of one-way traffic.

In early 1972, this correspondent visited the main sites of that large Saigon road-building program, and also the new contractor roads stretching into the Delta and into the plateau country around Pleiku and Da Nang.

Of the five bridges in the Saigon vicinity, the largest was the $4.8 million Bien Hoa structure over the Dong Ngai River. It was completed on May 1st, 1972.

The concrete and steel span is the longest in RMK–BRJ's bridge program—2,631 feet in length. Like the others, this was an immaculate, gleaming, off-white span made from pre-cast concrete beams, and was turned over to the Vietnamese in June of 1972. The others were the Binh Phuoc, the Tan An, the Binh Loi, and the Ben Luc bridges. All were finished and handed over to the Vietnamese ahead of schedule.

In the northern peripheries of the RMK road-building program, operations were strenuously beset by the enemy. Prior to the Easter Offensive, the enemy had infiltrated about 50,000 NVA troops into the Pleiku-A Shau area and were preparing to drive another 80,000 into the northernmost, Quang Tri-Hue area.

In several places, the RMK–BRJ workers were caught in the blast of NVA raids and probing actions. In these days, when MACV expected a major offensive, the contrator crews at An Khe felt the hardest blow.

At the An Khe camp, the boss of the RMK–BRJ road-building crew, 64-year-old Roy Carpenter, refused to panic. On the morning after a heavy NVA sapper raid, when the Saigon bosses were agreeing that the wisest course for the contractor crew would be to move them all the way to secure and peaceable Cam Ranh, Carpenter said No.

The U.S. military advisors in the area felt that in these days of withdrawal of U.S. forces, it would be wiser to evacuate the entire road-building crew from the spooky Dead Man's Valley.

Carpenter, the crusty veteran builder, contended that if they left—no matter how strong the guard—the Vietnamese looters would make short work of their irreplaceable heavy road-building equipment.

But eventually, NVA forces began to make daylight attacks along Route 19 where the RMK–BRJ crews were paving the road to Pleiku. So at last Carpenter and his crew went reluctantly to Cam Ranh.

The story had a happy ending, however. Carpenter and his crew were able to come back and finish the road to Pleiku before the April Offensive—with only small losses of equipment to looting.

The major currents of Vietnamization (including construction) had been taking effect—the Vietnamese armed forces were much improved, and our air power was ready for massive, calculated counter measures to hold back the enemy thrusts in the Easter Offensives of April 1972.

The first NVA thrusts were mainly in the north, where enemy accessibility and supply were easiest. Also along the Laotian and Cambodian borders where the Ho Chi Minh Trails maintained reinforcement routes.

That meant three major prongs of NVA penetration—the largest directly across the Demilitarized Zone with about 100 Soviet tanks, a force which grew to 70,000 men and heavy (up to 150mm or six-inch) artillery, rockets and mortars, into Quang Tri Province. Second, a many-pronged force of about 60,000 men with less tanks and artillery across the Ho Chi Minh trails from Laos, into Khe Sanh, the A Shau Valley and the plateau country of Kontum and Pleiku. The third, a drive which would eventually involve some 30,000 NVA, with light tanks and artillery, pushing from Cambodia south toward An Loc and Loc Ninh toward Saigon, 60 miles away.

Other flanks of this force drove in from the Parrot's Beak area of Cambodia, 40 miles due west of the South Vietnamese Capital.

As soon as the NVA Easter Offensive began in April 1972, President Nixon ordered heavy air raids on North Vietnamese supply routes into Hanoi and Haiphong, the first raids here since President Johnson stopped that bombing in 1968. Another new move was for our Navy carrier planes to drop mines to close the North Vietnamese ports, including Haiphong.

In their southern prong efforts, the NVA–VC columns failed after long bitter (and bloody) attacks. They failed completely to capture either the provincial towns of An Loc or Loc Ninh. They also failed to capture Hue, Kontum, Pleiku, or Tay Ninh. The only city to fall was Quang Tri— this was later recaptured by the South Vietnamese forces.

To go back to the planning phase of the close out, by September 1971 RADM Lalor was able to look ahead to the administrative

aspects of the contract closeout. He felt confident that getting the last work done on schedule was on track. He recognized that the final stage of the shut-down could get hopelessly tied up in paperwork and wrangling over relatively minor issues if it were not watched closely. So he decided to put this effort under intense management—a technique which had served well earlier in solving many OICC-contractor problems, i.e. the evolution of LOE and the development of improved material and equipment management.

RADM Lalor created an Assistant OICC for Administrative Close-out in October 1971 to develop and later implement detailed plans to wrap up the whole contract once the construction was finished.

Through a combination of aggressive determination, innovation, good weather and a lot of good luck, construction moved rapidly in the spring of 1972 and, despite the impact of the Easter offensive, construction was finished ahead of schedule in mid-May. By February, a detailed network analysis of the many interrelated tasks involved in the final closeout had been developed and was used to drive the work required in each area. As field operations ceased, the several operating components of the OICC organization moved under the AOICC for closeout so that this final effort could be fully coordinated with all other closeout work.

There were many vital operations involved in the wrap up. As the work was finished, the contractor reduced his labor force and closed out his remote sites. The OICC arranged for the transfer of the contractor camps, shops, etc. to approved agencies of the United States or Vietnamese governments. COMUSMACV established the procedures and priorities for site turnover. AID accepted many for ultimate transfer to the Vietnamese.

The disposition of equipment and surplus material was the most complex and sensitive part of the whole effort. Although most of the equipment was more than two years old and had been worked hard, it still had a lot of work left in it. A system was developed to distribute a complete listing of the potential releasable assets throughout the U.S. Defense establishment all over the world so that any organization could request any item paying only the cost of shipping. Priorities for the release of equipment to those submitting requests were established by the Secretary of Defense. This produced a file of several thousand requisitions at the OICC

so that a firm offer could be made when equipment actually became available. This system saved many months in the final disposition process. Approximately 12% of the major items of equipment was shipped back to the United States. Some 50% was transferred to the U.S. Army Property Disposal Agency in Vietnam for sale as a result of there being no claimant. This was the older equipment, virtually worn out. Approximately 3000 items were transferred to USAID for use in a program to foster the growth of a construction industry in Vietnam—another phase of Vietnamization.

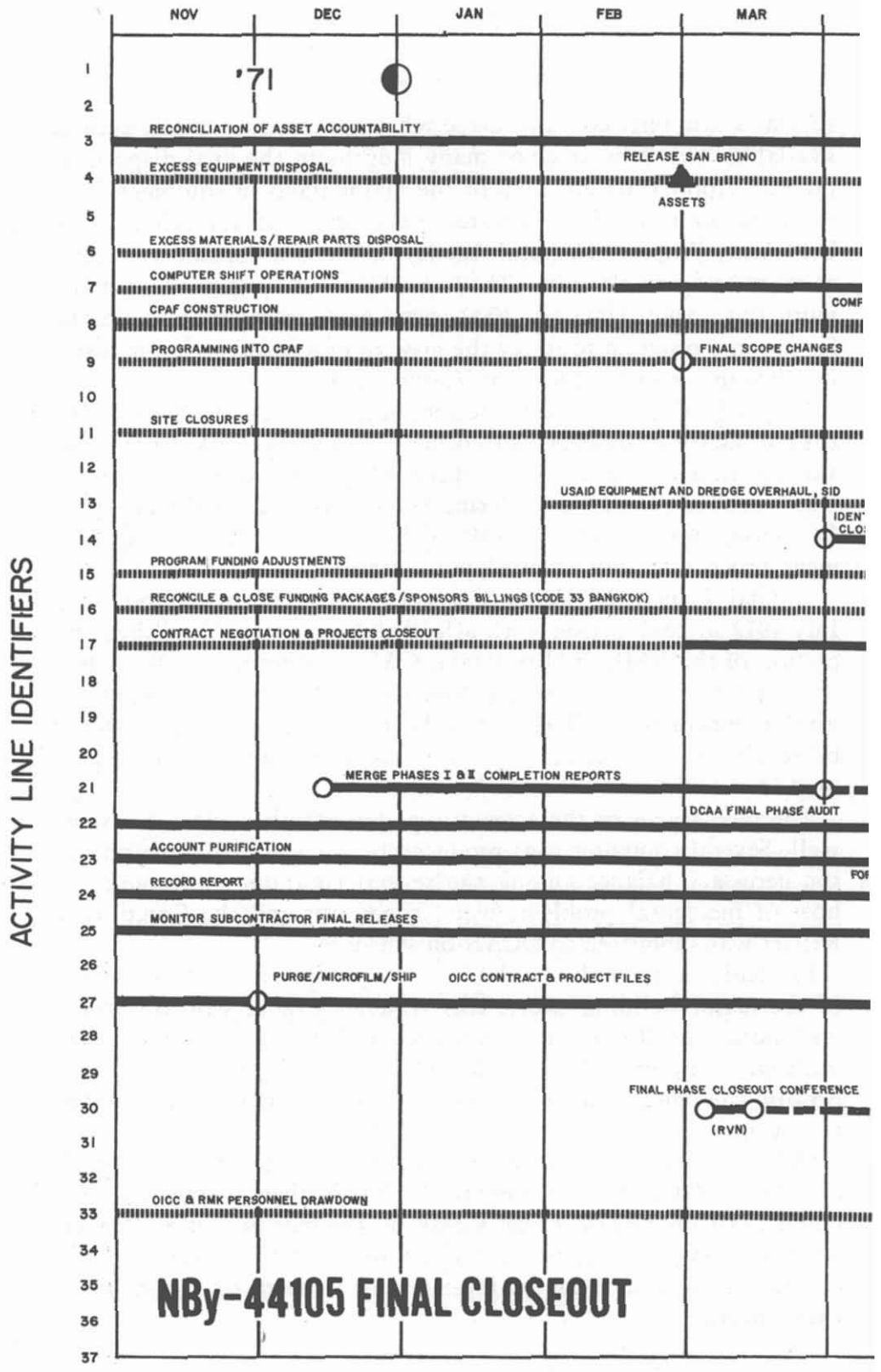
Virtually all surplus construction materials were purchased from the contractor or transferred to other U.S. agencies in Vietnam. The amount turned over to the Property Disposal Agency, $4,585,641 was remarkably small considering the size and age of the program. Of course, this was also a result of the improved material management procedures implemented years earlier.

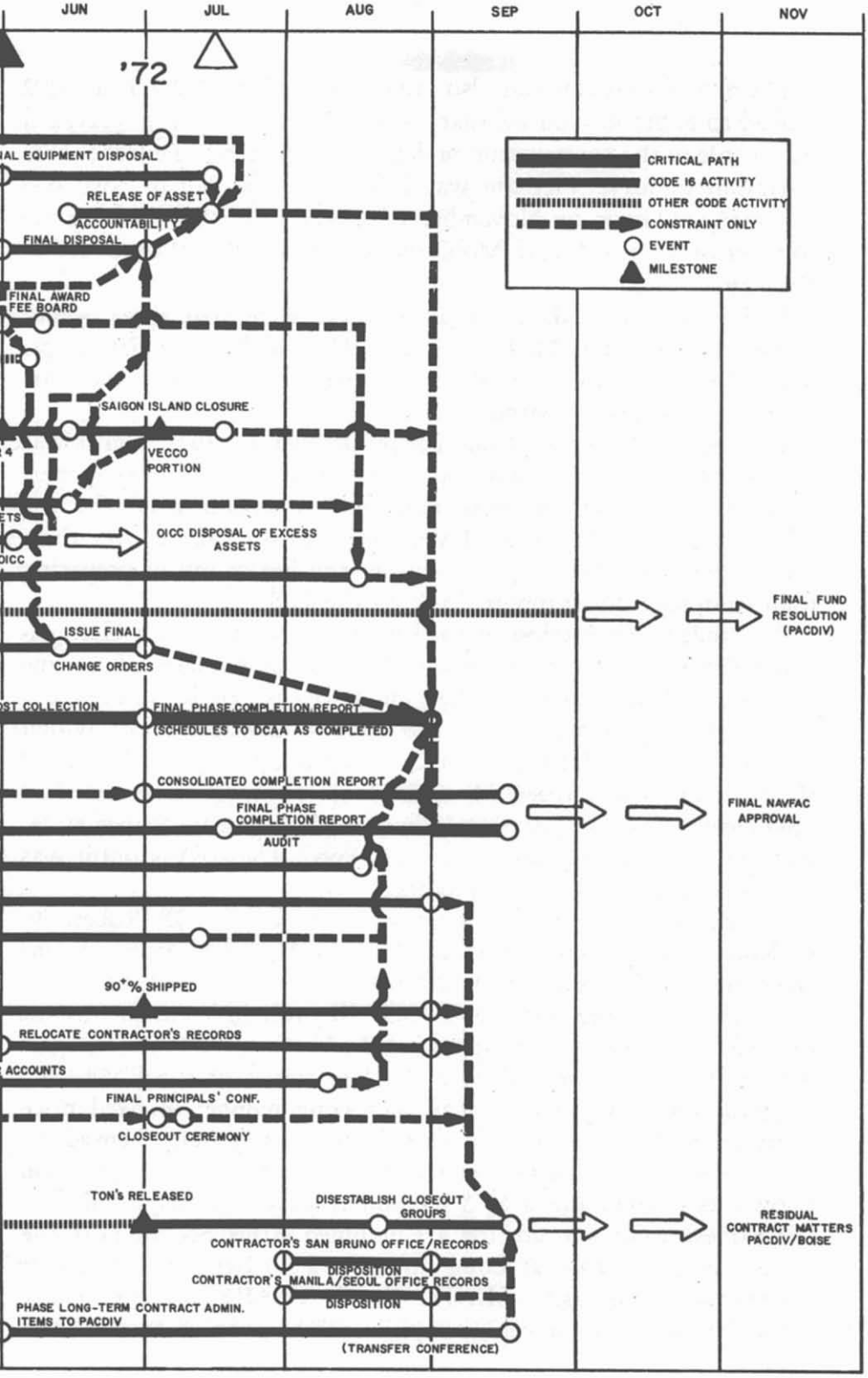
A final Principals' Conference was conducted in Saigon on 3 July 1972 in conjunction with a formal ceremony to note the completion of the RMK–BRJ program. CAPT Jortberg, the OICC, was then able to briefly review the long history of the program and to give an optimistic prediction that the final completion report would be ready for the Defense Contract Audit Agency review in September.

The final stages of the accounting-administrative close-out went well. Several computer runs produced by then in Bangkok proved the necessary balance among the several contractors' accounts. A host of incidental problems were ironed out and the Completion Report was submitted to DCAA on schedule.

Particular note of the DCAA role is appropriate. During the life of the major building effort, this watchdog office worked closely with both the OICC and the contractor with a healthy "cooperation without compromise" attitude. The final review went quickly because the office under Mr. Kenneth Coleman was really a part of the team.

OICC RVN closed its doors the first week of October 1972 with an approved Completion Report. CAPT Jortberg deposited copy number 001 on RADM Enger's desk on the morning of 5 October. At that time, no disputes remained between the Navy and the contractor—a remarkable achievement for a contract relationship of this nature.


NOV
DEC
JAN
FEB
MAR
'71
ACTIVITY LINE IDENTIFIERS
1
2
3
RECONCILIATION OF ASSET ACCOUNTABILITY
4
EXCESS EQUIPMENT DISPOSAL
RELEASE SAN BRUNO
ASSETS
5
6
EXCESS MATERIALS/REPAIR PARTS DISPOSAL
7
COMPUTER SHIFT OPERATIONS
8
CPAF CONSTRUCTION
9
PROGRAMMING INTO CPAF
FINAL SCOPE CHANGES
10
11
SITE CLOSURES
12
13
USAID EQUIPMENT AND DREDGE OVERHAUL, SID
14
15
PROGRAM FUNDING ADJUSTMENTS
16
RECONCILE & CLOSE FUNDING PACKAGES/SPONSORS BILLINGS (CODE 33 BANGKOK)
17
CONTRACT NEGOTIATION & PROJECTS CLOSEOUT
18
19
20
21
MERGE PHASES I & II COMPLETION REPORTS
DCAA FINAL PHASE AUDIT
22
23
ACCOUNT PURIFICATION
24
RECORD REPORT
25
MONITOR SUBCONTRACTOR FINAL RELEASES
26
27
PURGE/MICROFILM/SHIP
OICC CONTRACT & PROJECT FILES
28
29
30
FINAL PHASE CLOSEOUT CONFERENCE
(RVN)
31
32
33
OICC & RMK PERSONNEL DRAWDOWN
34
35
NBy-44105 FINAL CLOSEOUT
36
37


JUN
JUL
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OCT
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'72
CRITICAL PATH
CODE 16 ACTIVITY
OTHER CODE ACTIVITY
CONSTRAINT ONLY
EVENT
MILESTONE
AL EQUIPMENT DISPOSAL
RELEASE OF ASSET
ACCOUNTABILITY
FINAL DISPOSAL
FINAL AWARD FEE BOARD
SAIGON ISLAND CLOSURE
VECCO PORTION
OICC DISPOSAL OF EXCESS ASSETS
FINAL FUND RESOLUTION (PACDIV)
ISSUE FINAL CHANGE ORDERS
FINAL PHASE COMPLETION REPORT (SCHEDULES TO DCAA AS COMPLETED)
CONSOLIDATED COMPLETION REPORT
FINAL PHASE COMPLETION REPORT
AUDIT
FINAL NAVFAC APPROVAL
90+% SHIPPED
RELOCATE CONTRACTOR'S RECORDS
ACCOUNTS
FINAL PRINCIPALS' CONF.
CLOSEOUT CEREMONY
TON's RELEASED
DISESTABLISH CLOSEOUT GROUPS
RESIDUAL CONTRACT MATTERS PACDIV/BOISE
CONTRACTOR'S SAN BRUNO OFFICE/RECORDS
DISPOSITION
CONTRACTOR'S MANILA/SEOUL OFFICE RECORDS
DISPOSITION
PHASE LONG-TERM CONTRACT ADMIN. ITEMS TO PACDIV
(TRANSFER CONFERENCE)

FIGURE 28

The final Seabee closeout also came to its end in 1972. CBMU–302 moved to Subic Bay on February 4th, 1972, after having played a major role in the construction of dependent shelters. The last Seabee Battalion to leave Vietnam was NMCB–5. The flag of NMCB–5 departed for Guam on November 7th, 1971, officially marking the completion of the Naval Mobile Construction Battalion effort in Vietnam.

In February and March of 1972, there were still three Seabee Teams in the Delta, 7107, 7108, and 7411, and one in III Corps, 0321. I visited the camp of 7108, which was at Go Cong on the coast 35 miles southeast of Saigon.

The job of 7108 at Go Cong began October 21, 1971, and it was the usual Seabee Team gamut, but in the Spring of 1972, as they were moving out, their jobs were mostly civic action work for the locals—and preparing the ARVN engineers for taking over their camp when they left. Plus, of course, the heavy job of preparing their equipment for shipping back to the U.S.

We landed in a section of road next to the camp in a German-made Dornier short take-off and landing monoplane of a type whimsically referred to by Seabees and pilots as "Hitler's Revenge".

The first representatives of the ARVN Engineer outfit which would replace the Team in their Go Cong camp had already visited the camp and the Seabees. Many of these "Ruffpuff" engineers had been checked out on heavy road-building equipment, Seabee style. But the turnover was not to be until April. The ARVN outfit was the 841st Regional Force Engineers.

The Seabee officer who flew in with me was LCDR Robert N. Endebrock, the Officer in Charge of the COMCBPAC Seabee Teams Detachment. This detachment left Vietnam on 30 April 1972.

But the end of the Seabee and RMK–BRJ role in Vietnam was not the end of construction in support of the Vietnamese. As an integral part of Vietnamization, during the late stages of the RMK–BRJ program, the OICC awarded an increasing number of fixed price contracts to Vietnamese firms to help the people help themselves. A major road building project was awarded in early 1972 to a firm known as CIDEC and a $3.5 million contract was awarded to a Vietnamese joint venture for a Combined Arms School near the large U.S. Army Base at Long Binh. As a further effort to foster a construction industry MACV, OICC, USAID and the GVN worked together to develop ways in which surplus construction

equipment and facilities could be used to help put the skills learned by thousands of Vietnamese under the RMK–BRJ tutelage to work for their future.

To administer these Vietnamese contracts and a small number of on-going fixed price contracts with non-Vietnamese firms, the NAVFAC plan was for a new organization to replace the OICC RVN. On 1 September 1972, that portion of the OICC which had been working with the fixed price contracts was established as the Director of Construction, Republic of Vietnam under CDR E. H. Belton. The new DIRCON RVN reported to OICC Thailand. Thus, the organizational structure which existed prior to 1 July 1965 was re-established.

The total impact of this massive construction effort is perhaps best reflected in the words of Ambassador Ellsworth Bunker as he spoke at the 3 July close-out ceremony:

"I am pleased and proud to join in commemorating the completion of the RMK–BRJ construction program in Vietnam. This occasion, which marks the successful conclusion of a decade of achievement, is an especially gratifying and hopeful moment, for it reminds us that construction in the cause of war has also brought construction in the cause of peace and progress.

"While providing vital support to allied military efforts to win for Vietnam the right to determine its own affairs in peace, the builders we now honor have been laying groundwork for the only sure guarantee of self-sufficiency, stability and independence—a sound, flourishing and developing economy. I am pleased to have an opportunity to acknowledge the contribution of RMK–BRJ.

"First and most evident are the roads, harbors and other capital facilities that this great organization has built. They represent the most vivid and tangible evidence of the RMK–BRJ achievements.

"The ports that were built here to move the cargoes of war can in the years to come support the movement of cargoes of commerce and world trade. The airfields, roads and bridges that now bear military traffic can serve as lifelines for the distribution of goods and services throughout the nation.

"At a time when all too many forces are bent on destruction, RMK–BRJ's ten years of accomplishment have been in my opinion one of the finest episodes in our nation's history."

Appendix A

List of Acronyms and Abbreviations

ABFC	Advanced Base Functional Component
A&E	Architect and Engineer
AC&W	Aircraft Control and Warning (Station)
ACTOV	Accelerated Turnover to the Vietnamese
AFWL	Air Force Weapons Laboratory
AID	Agency for International Development (USAID)
AM-2	Aluminum Matting, Model 2
AOICC	Assistant Officer-in-Charge of Construction
APL	Personnel Berthing Craft
ARVN	Army of Republic of Vietnam
ASA	Army Security Agency
ASD(I&L)	Assistant Secretary of Defense (Installations and Logistics)
ASD(ISA)	Assistant Secretary of Defense (International Security Affairs)
ASP	Ammunition Supply Point
B&R	Brown and Root (Inc.)
BOQ	Bachelor Officer's Quarters
BPP	Border Patrol Police (Thailand)
BUDOCKS	Bureau of Yards and Docks
BUPERS	Bureau of Naval Personnel
CBBU	Construction Battalion Base Unit
CBC	Construction Battalion Center
CBLANT	(Commander) Construction Battalions, Atlantic
CBMU	Construction Battalion Maintenance Unit
CBPAC	(Commander) Construction Battalions, Pacific
CEC	Civil Engineer Corps
CEN COM	Central Highways and Waterways Committee
CECOS	Civil Engineer Corps Officer's School
CG	Commanding General
CIDG	Civilian Irregular Defense Group
CINCPAC	Commander-in-Chief, Pacific
CNO	Chief of Naval Operations
CO	Commanding Officer
COE	Corps of Engineers (Army)

COMNAVFORV	Commander Naval Forces, Vietnam
COMSERVPAC	Commander Services Forces, Pacific Fleet
COMUSMACV	Commander U.S. Military Assistance Command, Vietnam
CONUS	Continental United States
CP	Command Post
CPAF	Cost Plus Award Fee
CPFF	Cost Plus Fixed Fee
CPNAB	Contractors, Pacific Naval Air Bases
DASD(P&I)	Deputy Assistant Secretary of Defense (Properties and Installations)
DCAA	Defense Contract Audit Agency
DEPCOMPAC-DIVNAV-FACENG-COMSEA	Deputy Commander, Pacific Division, Naval Facilities Engineering Command, Southeast Asia (DEPSEA)
DFSP	Direct Forces Support Program
DGOH	Directorate General of Highways
DIRCON	Director of Construction
DIRPACDOCKS	Director, Pacific Division, Bureau of Yards and Docks
DMZ	Demilitarized Zone
DOD	Department of Defense
DOICC SEA	Deputy Officer-in-Charge of Construction, Southeast Asia
DPPO	Direct Procurement Petty Officer (Program)
DZK	Dillingham, Zachry and Kaiser (Joint Venture Contractor)
EBASCO	Electric Bond and Share Company
FMFPAC	Fleet Marine Force, Pacific
GAO	General Accounting Office
HEDSUPPACT	Headquarters Support Activity
HSA	Headquarters Support Activity (HEDSUPPACT)
ICC	International Control Commission
JATO	Jet-Assisted Takeoff
JCS	Joint Chiefs of Staff
JLRB	Joint Logistics Review Board
JUSMAG	Joint United States Military Advisory Group
LAAM	Light Anti-Aircraft Missile
LCU	Landing Craft, Utility
LDO	Limited Duty Officer

LOC	Lines of Communication
LOE	Level of Effort
LSD	Landing Ship, Dock
LST	Landing Ship, Tank
LTL	Vietnam Highway Designator
LVT	Landing Vehicle, Tracked (Amtrac)
MAAG	Military Assistant Advisory Group
MACV	Military Assistance Command, Vietnam
MACV–DC	Military Assistance Command, Vietnam—Director of Construction (MAC–DC)
MAF	Marine Amphibious Force
MAG	Marine Air Group
MAP	Military Assistance Program
MASF	Military Assistance, Service Funded
MAW	Marine Air Wing
MedCap	Medical (Civilian) Assistance Program
MedEvac	Medical Evacuation
MER	Minimum Essential Requirements
MK	Morrison-Knudsen International Co., Inc.
MOREST	Mobile Arresting Gear
MSTS	Military Sea Transport Service
NAS	Naval Air Station
NAVCAT	Navy Construction Action Team
NAVFAC	Naval Facilities Engineering Command (NAVFACENGCOM)
NAVSCON	Naval Schools Construction
NAVSUPPACT	Naval Support Activity (NSA)
NCB	Naval Construction Brigade
NCR	Naval Construction Regiment
NKP	Nakhon Phanom
NLF	National Liberation Front
NMCB	Naval Mobile Construction Battalion
NSA	Naval Support Activity (NAVSUPPACT)
NTP	Notice to Proceed
NVA	North Vietnamese Army
OCO	Office of Civil Operations
OICC RVN	Officer-in-Charge of Construction, Republic of Vietnam
OICC Thai	Officer-in-Charge of Construction, Thailand
OSD	Office of the Secretary of Defense
PA&E	Pacific Architects and Engineers
PEO	Program Expediting Office (Laos)

PHIBCB	Amphibious Construction Battalion
POL	Petrol, Oil, Lubricants
Prime BEEF	(Prime) Base Engineer Emergency Force
PSP	Pierced Steel Plank
PWRS	Prepositioned War Reserve Stock
QL	Vietnam National Highway Designator
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineering
RF & PF	Regional Forces and Provisional Forces ("Rough Puffs")
RMK	Raymond, Morrison-Knudsen (Joint Venture Contractor)
RMK–BRJ	Raymond, Morrison-Knudsen—Brown & Root, and J. A. Jones (Joint Venture Contractor)
ROICC	Resident Officer-in-Charge of Construction
ROK	Republic of Korea
R&R	Rest and Recreation
RVN	Republic of Vietnam
SATS	Short Airfield for Tactical Support
SEA	Southeast Asia
SEABEE	*C*onstruction *B*attalion; also, Construction Force personnel
SEACOG	Southeast Asia Coordinating Group
SEATO	Southeast Asia Treaty Organization
SLAM	Seeking, Locating, Annihilating, Monitoring
SMCSG	Special Military Construction Study Group
STAT	Seabee Technical Assistance Team
SUMPCO	Saigon University Mineral Products Company
TAD	Temporary Additional Duty
TAMS	Tippetts-Abbett-McCarthy-Stratton, Engineers of Panama, Inc.
TCN	Third Country National
TEC–PAE	Tudor Engineering Company and Pacific Architects and Engineers, Inc.
TRIM	Training Relations and Instruction Mission
UMD	Utah-Martin-Day (Joint Venture Contractor)
USA	United States Army
USAF	United States Air Force
USAID	United States Agency for International Development
USARV	United States Army, Vietnam
USIS	United States Information Service
USMC	United States Marine Corps
USOM	United States Operations Mission

VC	Viet Cong
VNAF	Vietnamese Air Force
VNN	Vietnamese Navy
WIP	Work-in-Place
XO	Executive Officer
Y&D	Yards and Docks (BUDOCKS)

Appendix B

Key Personnel Involved in Southeast Asia Construction

1. *U.S. Ambassador to RVN*

H. C. Lodge
E. Bunker

2. *SECDEF*

R. S. McNamara 1/1961–2/1968
C. M. Clifford 3/1968–1/1969
M. R. Laird 1/1969–1/1973

3. *DepSECDEF*

C. R. Vance 1/1964–6/1967
P. H. Nitze 7/1967–1/1969
D. Packard 1/1969–12/1971
K. Rush 2/1972–1/1973

4. *AsstSECDEF (Comptroller)*

R. N. Anthony 9/1965–7/1968
R. C. Moot 8/1968–1/1973

5. *AsstSECDEF (I&L)*

P. R. Ignatius 12/1964–8/1967
T. D. Morris 9/1967–2/1969
B. J. Shillito 2/1969–2/1973

6. *DASD (I&L)*

E. J. Sheridan

7. *Chairman/Joint Chiefs of Staff*

GEN M. D. Taylor, USA 10/1962–7/1964
GEN E. G. Wheeler, USA 7/1964–7/1970
ADM T. H. Moorer, USN 7/1970–

8. *SECARMY*

S. Ailes 1/1964–7/1965
S. R. Resor 7/1965–6/1971
R. F. Froehlke 7/1971–

9. *SECNAV*

P. H. Nitze 11/1963–6/1967
P. R. Ignatius 9/1967–1/1969
J. H. Chafee 1/1969–4/1972
J. W. Warner 5/1972–

10. *SECAF*

E. M. Zuckert 1/1961–9/1965
H. Brown 10/1965–2/1969
R. C. Seamans, Jr. 2/1969–

11. *COS USA*

GEN H. K. Johnson 7/1964–7/1968
GEN W. C. Westmoreland 7/1968–6/1972
GEN C. W. Abrams 7/1972–

12. *CNO*

ADM D. L. McDonald 8/1963–7/1967
ADM T. H. Moorer 8/1967–7/1970
ADM E. R. Zumwalt, Jr. 7/1970–

13. *COMDT USMC*

GEN W. M. Greene, Jr. 1/1964–12/1967
GEN L. F. Chapman, Jr. 1/1968–12/1971
GEN R. E. Cushman, Jr. 1/1972–

14. *COS USAF*

GEN C. E. LeMay 6/1961–1/1965
GEN J. P. McConnell 2/1965–7/1969
GEN J. D. Ryan 8/1969–

15. *CINCPAC*

ADM U. S. G. Sharp
ADM J. S. McCain, Jr.

16. *COMMACV*

GEN P. D. Harkins 2/1962–7/1964
GEN W. C. Westmoreland 8/1964–7/1968
GEN C. W. Abrams 7/1968–7/1972
GEN F. C. Weyand 7/1972–3/1973

17. *MACV-DC*

BGEN C. H. Dunn 2/1965–7/1966
BGEN D. A. Raymond 7/1966–6/1967
BGEN A. P. Rollins 11/1967–9/1968
MGEN W. T. Bradley 10/1968–
BGEN E. P. Yates 7/1969–
BGEN R. M. Tarbox 5/1970–
MGEN R. P. Young 12/1970–3/1972
BGEN J. A. Johnson 3/1972–6/1972

18. *CG III MAF*

LGEN L. W. Walt
LGEN R. E. Cushman
LGEN H. Nickerson, Jr.
LGEN K. B. McCutcheon
LGEN D. J. Robertson

19. *CINCPACFLT*

ADM R. L. Johnson
ADM J. J. Hyland

20. *COMSERVPAC*

RADM E. B. Hooper

21. *COMNAVFORV*

RADM N. G. Ward
RADM K. L. Veth
VADM E. R. Zumwalt, Jr.
VADM J. H. King

22. *Commander NAVFAC/Chief BUDOCKS (Prior to May 1966)*

RADM P. Corradi 2/1962–11/1965
RADM A. C. Husband 11/1965–8/1969
RADM W. M. Enger 8/1969–5/1973

23. *COE USA*

LGEN W. K. Wilson, Jr.	5/1961–6/1965
LGEN W. F. Cassidy	7/1965–7/1969
LGEN F. J. Clarke	8/1969–

24. *DCE USAF*

MGEN A. M. Minton	3/1959–7/1963
BGEN R. H. Curtin	7/1963–4/1968
MGEN G. H. Goddard	5/1968–12/1971
MGEN M. R. Reilly	1/1972–

25. *Vice Commander NAVFAC/Deputy Chief BUDOCKS*

RADM A. C. Husband	5/1964–11/1965
RADM W. M. Enger	11/1965–8/1969
RADM J. V. Bartlett	8/1969–10/1972

26. *Commander PACDIV/Director PACDIV; Commander CBPAC*

RADM J. R. Davis	5/1963–1/1966
RADM W. M. Heaman	1/1966–9/1969
RADM S. R. Smith	9/1969–6/1972
RADM D. G. Iselin	6/1972–7/1973

27. *Commander CBLANT*

CAPT R. R. Wooding	11/1963–6/1965
CAPT S. R. Smith	6/1965–10/1966
CAPT G. A. Busbee, Jr.	10/1966–6/1968
CAPT D. G. Iselin	6/1968–9/1969
CAPT C. F. Krickenberger, Jr.	9/1969–9/1970
CAPT W. F. Rogers	9/1970–8/1972

28. *Deputy COMPACDIV-SEA*

RADM R. R. Wooding	3/1966–12/1966
RADM P. E. Seufer	12/1966–6/1967
RADM S. R. Smith	6/1967–7/1968
RADM H. J Johnson	7/1968–3/1970
RADM A. R. Marschall	3/1970–3/1971
RADM F. M. Lalor, Jr.	3/1971–3/1972

29. *OICC RVN*

CAPT M. E. Scanlan 7/1965–9/1965
RADM W. M. Heaman 9/1965–12/1965
RADM R. R. Wooding 12/1965–3/1966
RADM P. E. Seufer 3/1966–6/1967
RADM S. R. Smith 6/1967–7/1968
RADM H. J. Johnson 7/1968–3/1970
RADM A. R. Marschall 3/1970–3/1971
RADM F. M. Lalor, Jr. 3/1971–3/1972
CAPT R. F. Jortberg 3/1972–10/1972

30. *COM3rdNCB*

RADM R. R. Wooding 6/1966–12/1966
RADM P. E. Seufer 12/1966–6/1967
CAPT A. R. Marschall 6/1967–9/1967
RADM J. V. Bartlett 9/1967–3/1969
RADM J. G. Dillon 3/1969–3/1970
RADM A. R. Marschall 3/1970–2/1971
RADM F. M. Lalor 2/1971–11/1971

31. *DOICC-SEA for South Vietnam*

CAPT W. R. Boyer 1/1962–12/1962
CAPT G. T. Swiggum 1/1963–1/1964
CAPT J. F. Beaver 1/1964–2/1965
CAPT M. E. Scanlan 2/1965–6/1965

32. *OIC CBPACDET RVN*

LCDR J. A. Wright 9/1963–9/1964
LCDR J. R. Wear 9/1964–6/1965
LCDR D. B. Wile 6/1965–7/1966
LCDR T. N. Tate 9/1966–7/1967
LCDR A. S. Poole, Jr. 7/1967–6/1968
LCDR A. N. Olsen 6/1968–12/1968
LCDR W. F. Frazier 12/1968–9/1969
LCDR W. M. Garbe 9/1969–12/1969
LCDR R. B. Bell, Jr. 12/1969–12/1970
LCDR E. W. Buckner 12/1970–10/1971
LCDR R. N. Endebrock 10/1971–5/1972

33. *ROICC Vietnam*

LTJG E. W. McLaughlin	4/1961–12/1961

34. *OICC Thailand/OICC SEA-Bangkok (prior to July 1965)*

CAPT G. S. Robinson	8/1961–5/1964
CAPT G. E. Fischer	5/1964–10/1965
CAPT W. M. Gustafson	10/1965–8/1967
CAPT F. M. Lalor, Jr.	8/1967–2/1969
CAPT E. R. Stacey	2/1969–10/1969
CAPT E. G. Underhill	10/1969–11/1971

35. *RMK/RMK-BRJ Senior Officials*

W. N. Riker	1/1962–5/1962	Proj. Mgr.
W. W. Hunt	5/1962–12/1963	Proj. Mgr.
H. M. Hudson	1.2/1963–12/1965	Proj. Mgr.
L. D. Wilbur	5/1965–1/1966	Res. Part.
B. L. Perkins	2/1966–7/1967	Res. Part.
J. A. Lilly	8/1965–12/1967	Gen. Mgr.
F. S. McGarvey	11/1967–6/1969	Gen. Mgr.
J. B. Kirkpatrick	6/1969–4/1972	Gen. Mgr.
B. J. Coyne	4/1972–Termt'n	Gen. Mgr.

36. *RMK–BRJ Contract 44105 Signatories*

B. J. Katz	Dir. Contr. Div., BUDOCKS
H. C. Boschen	V-P Raymond International of Delaware, Inc.
J. B. Bonny	Pres. Morrison-Knudsen of Asia
H. J. Frensley	Pres. Brown & Root
R. A. Jones, Jr.	V-P J. A. Jones Construction Co.

NCF Commanding Officers

Name	*Period in billet*
NMCB 1	
CDR (CAPT) R. T. Hardy	Mar 66–Apr 66
CDR P. R. Gates	Apr 66–Feb 68
CDR T. J. Mitchell	Feb 68–17 Aug 69
CDR C. V. Popwich	17 Aug 69–23 Jan 71
CDR P. Oliver Jr	23 Jun 71–8 Aug 72
CDR H. E. Boyce, III	8 Aug 72–Present
NMCB 3	
CDR (CAPT) J. D. Rumble	Jan 64–Jan 66
CDR R. C. Foley	Jan 66–May 68
CAPT C. R. Whipple	May 68–25 Feb 70
CDR J. L. Godsey	25 Feb 70–30 Jul 71
CDR G. L. Smith	30 Jul 71–3 Aug 73
CDR J. A. Westcott	3 Aug 73
NMCB 4	
CDR (CAPT) W. A. Walls	Jul 65–12 Apr 67
CDR (CAPT) R. M. Fluss	12 Apr 67–Mar 69
CDR R. D. Gaulden	Mar 69–16 Dec 70
CDR J. A. Ruscyk	16 Dec 70–31 Oct 72
CDR R. E. Alexander	31 Oct 72
NMCB 5	
CDR (CAPT) W. F. Russell	May 64–Aug 66
CDR E. J. Williams Jr	Aug 66–1 Apr 68
CDR R. B. Wilson	1 Apr 68–24 May 69
CDR R. A. Schade Jr	24 May 69–31 May 71
CDR R. J. McHugh Jr	31 May 71–17 Aug 73
CDR T. F. Auerbach	17 Aug 73
NMCB 6	
CDR H. A. Tombari	27 May 64–5 Jul 66
CDR J. C. Day Jr	5 Jul 66–17 Mar 67
CDR R. D. Keegan	17 Mar 67–28 Feb 69
CDR H. A. Crisp	28 Feb 69–Nov 69

DISESTABLISHED NOV 69

NMCB 7

CDR (CAPT) J. T. Acuff ..... 11 Jan 65–1 Feb 67
CDR L. D. Lawson ..... 1 Feb 67–13 Aug 68
CDR J. C. Rickels ..... 13 Aug 68–11 Apr 70
CDR P. Oliver Jr ..... 11 Apr 70–11 Aug 70
LCDR D. C. Sturmer ..... 11 Aug 70–Aug 70

DISESTABLISHED AUG 70

NMCB 8

CDR (CAPT) P. A. Phelps ..... 20 Jul 65–2 Apr 67
CDR J. F. O'Leary ..... 2 Apr 67–16 Jul 68
CDR R. J. Westberg ..... 16 Jul 68–Dec 69

DISESTABLISHED DEC 69

NMCB 9

CDR (CAPT) R. E. Anderson ..... 6 Nov 64–2 Dec 66
CDR D. N. Shockey ..... 2 Dec 66–14 Feb 68
CDR J. A. Wright ..... 14 Feb 68–Nov 69

DISESTABLISHED NOV 69

NMCB 10

CDR W. H. Bannister ..... 19 Aug 63–24 Aug 65
CDR (CAPT) T. C. Williams ..... 24 Aug 65–5 May 67
CDR (CAPT) D. A. Bartley ..... 5 May 67–23 May 69
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