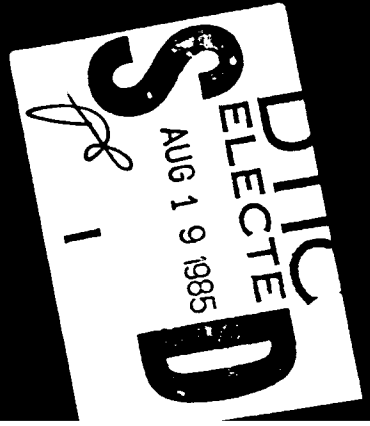

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REPORT DOCUMENTATION PAGE

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1. REPORT NUMBER	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): Security Assistance for Force Modernization-- The Saudi Arabian National Guard Program	5. TYPE OF REPORT & PERIOD COVERED: STUDENT ESSAY
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Daniel J. Kelleher	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: U.S. Army War College, Carlisle Barracks, PA 17013-5050	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: U.S. Army War College, Carlisle Barracks, PA 17013-5050	12. REPORT DATE: 15 April 1985
	13. NUMBER OF PAGES: 29
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report): Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The study provides an overview on the modernization of the Saudi Arabian National Guard. It addresses the U.S. Security Assistance and U.S. Army Project Management efforts that were brought to bear in the modernization effort. It provides examples of how foreign military sales (FMS) cases are used in procuring both weapon systems (hardware) and support services (training/technical assistance). It describes organization structures used by U.S. agencies to carry out the task of modernization. It provides a (over)

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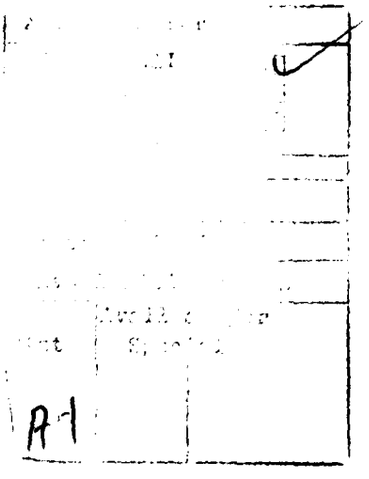
20. brief overview of the modern Saudi Arabian National Guard's capabilities to include unit organization and equipment. Program costs and milestone dates are shown along with an analysis of the effectiveness of U.S. management. Information and data presented was obtained through various means: U.S. official documents, input from U.S. contractors, personal interviews with members of contractors' staff, and U.S. Project Manager's Office, and actual on site experience of the author. A series of concepts and recommendations are put forward by the author to demonstrate how: (1) future U.S. security assistance efforts might capitalize from lessons learned with SANG program; and (2) use of non-standard weapon systems provided the Saudi Arabian Government could be used to offset present mobility problems of the new U.S. Army Light Infantry Divisions.

SECURITY ASSISTANCE FOR FORCE MODERNIZATION — THE SAUDI ARABIAN NATIONAL GUARD PROGRAM

BY

DANIEL J. KELLEHER
ARMY MATERIAL COMMAND

15 APRIL 1985



ABSTRACT

AUTHOR: Daniel J. Kelleher, AMC, DA

TITLE: Security Assistance for Force Modernization — The Saudi Arabian National Guard Program

FORMAT: Individual Student Essay

DATE: 15 April 1985 PAGES: 26 CLASSIFICATION: Unclassified

The study provides an overview on the modernization of the Saudi Arabian National Guard. It addresses the U.S. Security Assistance and U.S. Army Project Management efforts that were brought to bear in the modernization effort. It provides examples of how foreign military sales (FMS) cases are used in procuring both weapon systems (hardware) and support services (training/technical assistance). It describes organization structures used by U.S. agencies to carry out the task of modernization. It provides a brief overview of the modern Saudi Arabian National Guard's capabilities to include unit organization and equipment. Program costs and milestone dates are shown along with an analysis of the effectiveness of U.S. management. Information and data presented was obtained through various means: U.S. official documents, input from U.S. contractors, personal interviews with members of contractors' staff, and U.S. Project Manager's Office, and actual on site experience of the author. A series of concepts and recommendations are put forward by the author to demonstrate how: (1) future U.S. security assistance efforts might capitalize from lessons learned with SANG program; and (2) use of non-standard weapon systems provided the Saudi Arabian Government could be used to offset present mobility problems of the new U.S. Army Light Infantry Divisions.

LIST OF FIGURES

INTRODUCTION

The governments of the United States of America and the Kingdom of Saudi Arabia by executive agreement of 19 March 1973 established a cooperative long term relationship designed to satisfy the requirements of the Saudi Arabian National Guard (SANG). The modernization program was an ambitious one designed to be developed in phases over time to ensure that SANG force modernization was in step with SANG personnel and monetary resources.

The modernization effort was and continues to be a highly complex force modernization program that is unique within the anals of U.S. Army history. The overall responsibility for the success of the program lies with the U.S. Army Project Managers Office for Modernization of the Saudia Arabian National Guard — PM-SANG. This in itself is unique since project managers are normally responsible for the development of major weapon systems — hardware — not modernizing a military force structure of a foreign government. In addition, the magnitude of the SANG program is immense. The value of the hardware, support services, technical assistance, and facilities, including medical, are at this time (1985) in excess of 3 billion dollars and the end is not yet in sight!

The SANG modernization program is an excellent example of American management. It involves the services of a U.S. contractor specifically hired to do the actual training of SANG personnel under the aegis of a U.S. Army Project Manager. In essence, the contractor (Vinnell Corporation) was essentially a para-military organization doing what tradi-

tionally has been the role of U.S. Army trainers. The main reason for such an arrangement was the political pressure on both nations to keep the U.S. military presence low keyed, while at the same time ensuring the modernization effort was fully controlled and influenced by the USG. The American management effort did exactly that. It insured, by having a U.S. Army PM on site procuring and managing SANG equipment, the best weapon systems would be procured and delivered on time. It would also insure that the training provided SANG military by the contractor met U.S. Army standards. The U.S. contractor on the other hand provided the manpower to accomplish all the training and support needed for the modernization effort. Initially, this figure involved over 1,000 personnel. The U.S. Army PM Office contained approximately 120 personnel. The end result was essentially a U.S. management force of over 1,100 personnel with only a small U.S. military contingent of approximately 5% which allowed a low U.S. military profile at the same time insuring the U.S. Army was fully in control of the SANG program.

THE SAUDI ARABIAN NATIONAL GUARD

The Kingdom of Saudi Arabia has two standing military ground forces. The Saudi Arabian National Guard (SANG) is one, and the Saudi Arabian Land Forces (SALF) is the other. This report will address only SANG, since the unique U.S. Army Project Manager and Contractor interface involved only the SANG force. I would point out that the relationship between the SANG and the SALF are quite different than that of the active U.S. Army and the Reserve Component U.S. National Guard, which under federalization constituted a unified force structure. Not so with SANG which is an autonomous military component with a mission distinct

from SALF. The mission of the SANG is essentially three-fold: (1) protect the royal family; (2) provide internal security within the borders; and (3) protect the country's oil fields and petroleum export facilities. The SANG is commanded by Prince Abdullah Ibn Abdul Aziz, the present crown prince second in line to his half brother King Fahd.

The size of the SANG force is approximately 26,000 personnel made up of 20 regular and 26 irregular battalions located throughout the Kingdom. Many of these units were poorly equipped and organized given their mission and the unstability of many countries in the Mideast Region. Transportation included all types of trucks from several nations. Its arms were 3.5 rockets, 50 CAL machine guns and various rifles. The entire SANG is made up of Bedouin volunteers who pledge allegiance to the King and serve in his defense. The SANG provides a strong traditional bond between the individual Sheiki and the King since members of each tribe serve in the force. There was little overall organizational control of SANG in the early 1960's or were there modern weapons in their inventory. The first effort to modernize SANG took place in 1964 with the inclusion of approximately 120 Jordanian officers into the force in attempts to develop a more cohesive organization. However, in that time period the Kingdom was not very wealthy — it was as a matter of fact one of the world's poorer nations and even received military assistance and grant aid funds from the United States.[1] It was not until the late 1960's and early 1970's with the importance of oil in the west that the Kingdom became extremely wealthy and the Arabian Peninsula so critical to western energy needs. With the advent of that wealth and the turbulence of the region, the Kingdom wisely chose to modernize its military forces including SANG. With respect to SANG modernization, the Saudi government asked both the United States and the

United Kingdom to submit proposals to meet SANG needs. Both countries did and the United States' proposal was selected. It was formalized by Prince Abdulla, Commander SANG and The Honorable Nicholas G. Thacher, Ambassador to Saudi Arabia on 19 March 1973. The United States, under the terms of the document, agreed to the following:

> To provide technical and supervisory assistance to the government of Saudi Arabia in connection with: preparation of a National Guard Modernization Plan to cover such functions as organization, training, procurement, construction, maintenance, supply and administrative support; development and administration of training programs, procurement of facilities, materials, equipment and services necessary to implement the Plan. Supervision of the design and construction of training, maintenance, supply and communication facilities, and other facilities related thereto, as necessary to implement the plan. Management of the establishment and operation of training, administrative and logistic support elements.[2]

The modernization effort did not involve all SANG forces. It initially involved only the forces in the Riyadh area where the King and key members of the royal family reside.

The end result of the SANG modernization effort was to produce highly mobile independent mechanized infantry battalions who, when engaged in combat, could close with the enemy at high speeds and have the ability to maneuver and bring concentrated fire power to destroy him or when in a defensive position to have the capability to repell any assault. The mechanized infantry battalion originally programmed for is shown at Figure 1.

However, it was mutually agreed by both SANG and PM SANG that the aggregate size of the present battalion was too large for its mission given the weapon systems selected. Consequently, a new combine arms battalion was structured which met SANG's requirements. Figure 2 reflects the preferred and present CAB configuration. The new PM SANG recommended organization resulted in manpower savings of 262 personnel—

Fig. 1

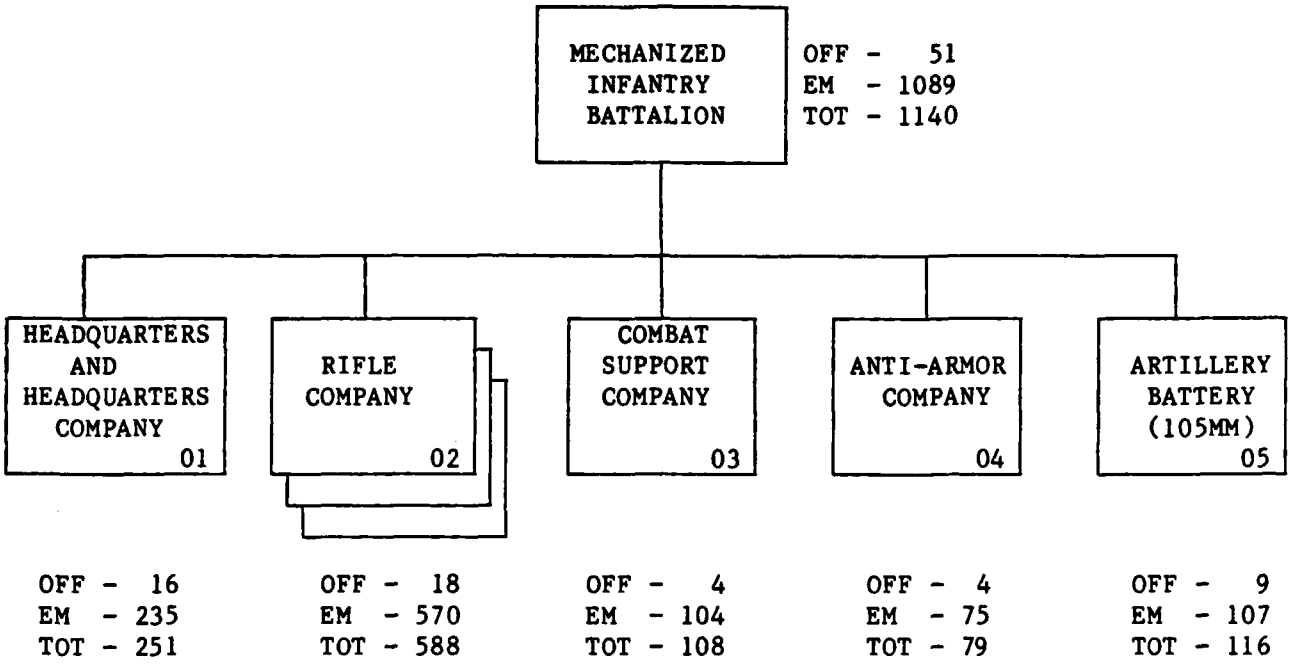
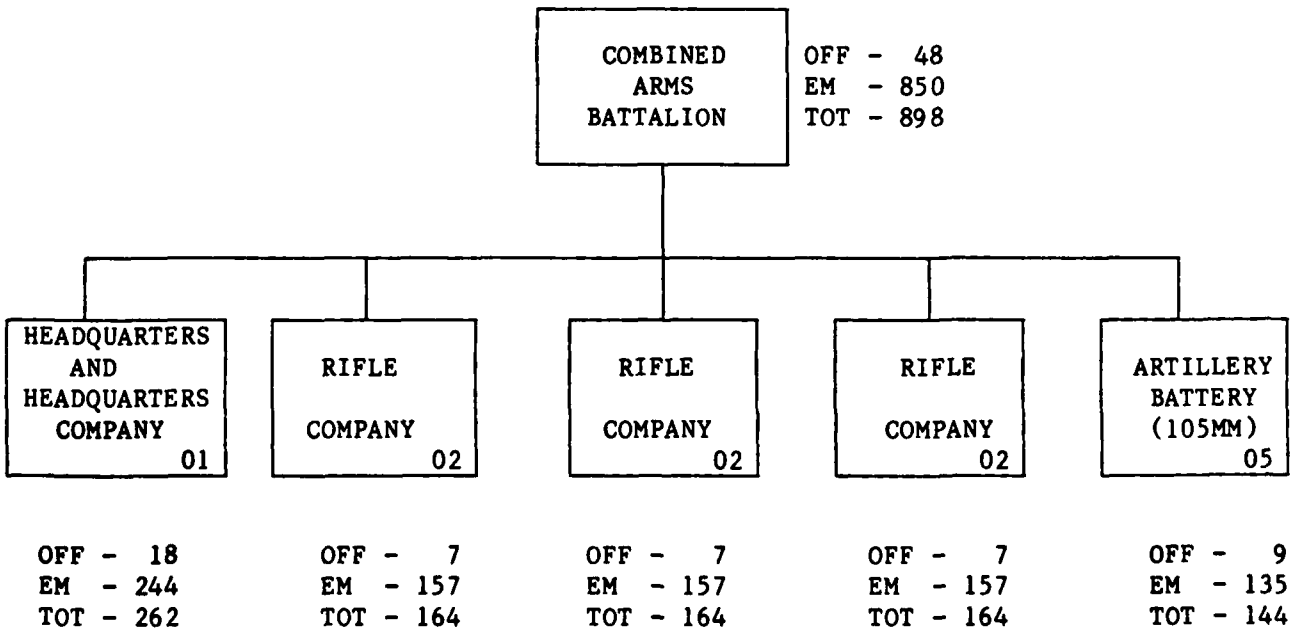

MECHANIZED INFANTRY BATTALION
OFF - 51
EM - 1089
TOT - 1140
HEADQUARTERS AND HEADQUARTERS COMPANY 01
OFF - 16
EM - 235
TOT - 251
RIFLE COMPANY 02
OFF - 18
EM - 570
TOT - 588
COMBAT SUPPORT COMPANY 03
OFF - 4
EM - 104
TOT - 108
ANTI-ARMOR COMPANY 04
OFF - 4
EM - 75
TOT - 79
ARTILLERY BATTERY (105MM) 05
OFF - 9
EM - 107
TOT - 116

Fig. 2


COMBINED ARMS BATTALION
OFF - 48
EM - 850
TOT - 898
HEADQUARTERS AND HEADQUARTERS COMPANY 01
OFF - 18
EM - 244
TOT - 262
RIFLE COMPANY 02
OFF - 7
EM - 157
TOT - 164
RIFLE COMPANY 02
OFF - 7
EM - 157
TOT - 164
RIFLE COMPANY 02
OFF - 7
EM - 157
TOT - 164
ARTILLERY BATTERY (105MM) 05
OFF - 9
EM - 135
TOT - 144

almost 23 percent! This was very significant given the personnel resource constraints of SANG. This organization change in force structure influenced by PM-SANG is an excellent example of how such an intensive management cell can assist developing nations meet their military requirements. It was of particular importance with the Kingdom of Saudi Arabie because the SANG modernization program was competing head on for scarce military resources with other multi-billion dollar defense programs: Saudi Arabian Army Land Force, Royal Saudi Arabian Air Force, and the Royal Saudi Arabian Naval Expansion Program.

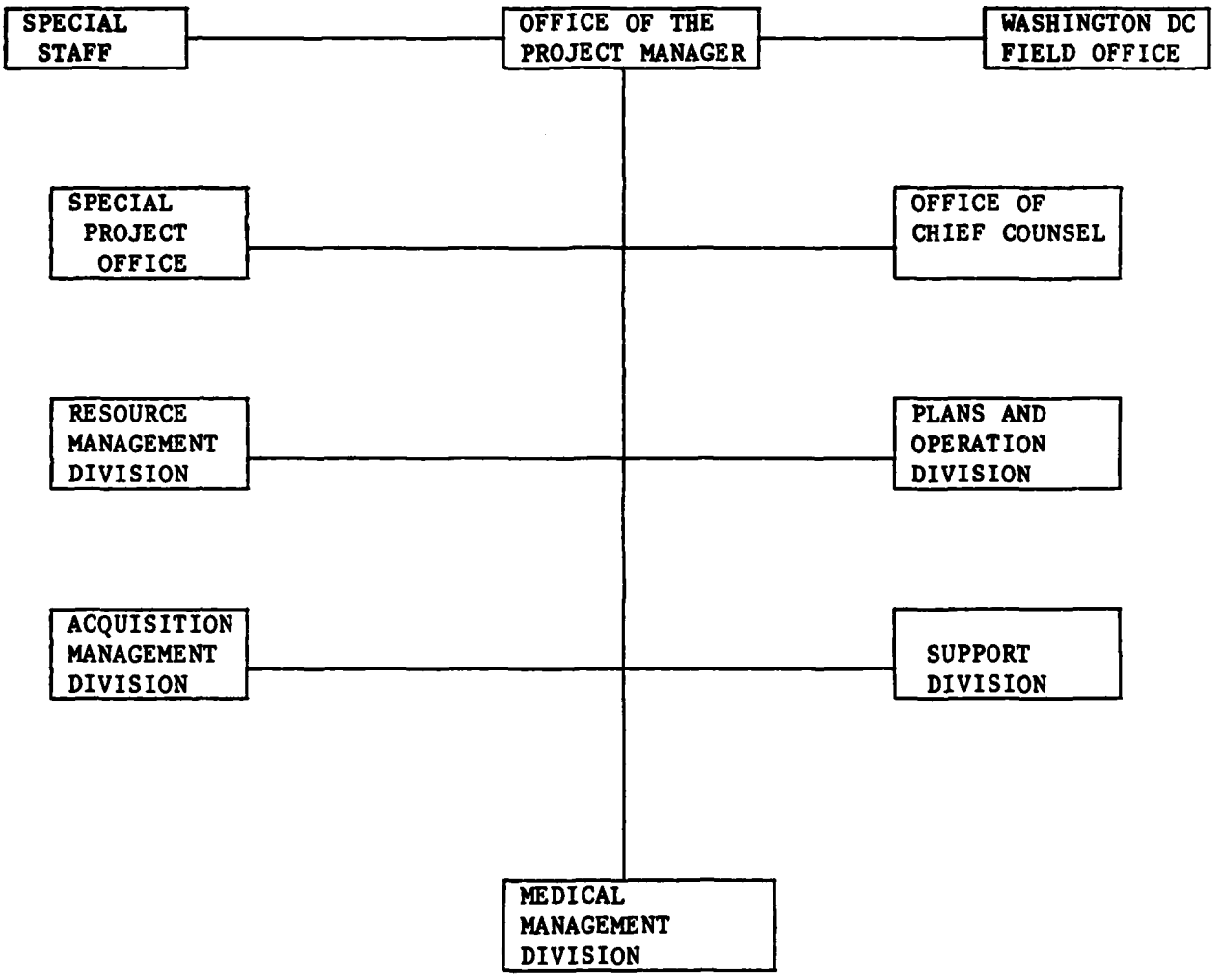
PROJECT MANAGER: PM-SANG

Since its inception in 1973, the modernization of SANG has been under the auspices of a U.S. Army Project Manager. The present project manager is Brigadier General Schwartz, who assumed command in 1984. The PM position with regard to the SANG modernization program is unique in that project managers normally are responsible for the development and initial fielding of equipment or weapon systems — not a force structure as SANG. PM-SANG operates under a charter signed by the Secretary of the Army. He reports directly through Commander, United States Security Assistance Center, AMC to Commander, AMC, Alexandria, Virginia. The PM mission is as follows:

> The Project Manager is responsible for management of the program to modernize the Saudi Arabian National Guard (SANG) under the terms of the memorandum of understanding . . . . The objective of the program is to modernize the SANG in the areas of organization, training, equipment, maintenance, supply, and facilities commensurate with the standards of the U.S. Army as appropriately suited to the capabilities of the SANG. He will exercise principal authority over the planning, direction, execution, and control of the modernization which covers all elements, missions, functions, and requirements of the SANG.[3]

Fig. 3

PM SANG ORGANIZATION



The present PM SANG has a staff of approximately 120 personnel and is organized as shown in Figure 3. The organizational structure is unique in that the PM and almost his entire staff are located in country. A Washington, D.C. liaison office consisting of only four persons is located at AMC Headquarters. The liaison office is extremely important and interfaces with AMC Security Assistance Center, DA, DOD, and the State Department in carry out and coordinating PM-SANG's mission. I would point out that the services of the Office of the Project Manager are paid for under a foreign military sales case (FMS) as is all hardware and services provided. The FMS case also pays for PM-SANG personnel training, housing, medical and other benefits including military retirement. The Saudi government pays well for the management services of PM-SANG and in return they have and continue to receive an intensive management cell that has provided a highly trained, mobile combat arms force that can meet its mission.

The organization of PM SANG is structured to maximize its personnel to insure all the needs of SANG are adequately covered by carefully monitoring the work efforts and results of contractor training. The functional alignment insures that PM SANG is continually aware of both the status of FMS cases, equipment and the level of training being provided. From its inception, PM SANG has insisted on a centralized data base necessary to operate in the political, military and resource constrained arena. As mentioned earlier, the scope of the SANG program is immense and complex. A list of the major weapon systems and equipments are shown at Figure 4. Note the number of armored cars — 441. I will have more to say on the armor car later in the report. Suffice to say at this time that the armor car is of U.S. manufacture

and that the U.S. Army is the only army in the world who does not use the armor car.

The dollar value of the SANG program is illustrated at Figure 5. What is not reflected in the figures are the value of the present and proposed medical facilities being built for SANG. The value of these facilities are approximately $1.2 billion.

SANG MEDICAL PROGRAM

The SANG had determined that its ongoing force modernization program should be complimented with a modern and responsive military health program. The Project Manager's Office supported that position and acted as a catalyst to bring it to fruition. This was not an easy action and the bureaucracy of both countries added to the problem. Prior to the execution of the medical services project numerous legal and political agreements had to be formulated and concurred with. These included:

(a) Modifying the Department of Army charter to allow PM-SANG to undertake such a proposal in addition to its previously agreed to directives.

(b) Developing an FMS case to cover all aspects of the program: hospital and clinic construction, medical equipment, and training to include direct enrollment in selected universities and technical institutions in Saudi Arabia, The United States and elsewhere. The scope of the medical effort involved a 500-bed hospital, two 250-bed hospitals, 30 permanent clinics, 3 Mash hospitals and contractor support for ten years.

(c) An executive agreement between the governments of Saudi Arabia and The United States establishing a cooperative long-term relationship to satisfy SANG's total health care requirements. (Agreement

signed by both governments in August 1981.)

The successful development of SANG's medical health program without impact on SANG's combat modernization effort clearly demonstrates the effectiveness of the project manager's efforts. This point cannot be overstated when you recognize the political realities existing within the kingdom and the other major Saudi government agencies that were also striving to develop their own autonomous health programs, such as the Saudi Ministry of Defense, responsible for the health needs of Saudi military Army, Navy, Air Force -- less the SANG. In addition, the Ministry of Health, responsible for the welfare of the general public, was also involved in developing and constructing medical facilities for civilians. Figure 3 reflects the medical management division added to PM-SANG to intensely manage the new medical program.

JOINT MANAGEMENT

PM-SANG's efforts in both the modernization effort of the combat forces and with the establishment of a SANG medical program strive for SANG self-sufficiency. There was initially on the part of SANG personnel a reluctance to become actively involved in all aspects of the modernization efforts. This was from my perspective due to the lack of experience in the areas being programmed and executed. That factor coupled with language and cultural aspects initially created a "buffer" between US/Saudi personnel that had impact on timely decisions. However, BG Gerald Bartlett, PM-SANG in May 1978 was successful in putting together a joint management organization consisting of key personnel from PM-SANG, SANG, and the British Advisory Group to SANG. The active participation of the SANG in this joint group seems to be the turning

point in the degree of interest and involvement SANG had with their own program. A good example was the establishment of a Joint Procurement Office in late 1979 giving SANG personnel experience in contracting.

EQUIPMENT

The modernization effort was a quantum leap for SANG. It essentially involved taking untrained troops and placing them into a mechanized infantry battalion and subsequently into smaller combined arms battalions more suited for SANG's mission. This is not the desired route which would have been a more evolutionary military process. A list of the major weapons systems provided SANG in its modernization are shown on Figure 4.

The core vehicle selected by SANG for a weapon's platform was an armored car — a Cadillac Gage V150 gasoline-powered vehicle. Given the SANG's mission and its lack of experience with track vehicles, it was an excellent choice, supported by the PM. The SANG has one of the largest armored car forces in the world tailored for combat. The following major weapon systems are configured on the V150 car:

- 90MM Mecar/Cockerill Low Velocity Cannon
- TOW Missile
- Vulcan 20MM Air Defense Gun
- 20MM Oerlikon Cannon
- 81MM Mortar
- 50 CAL Turret Mounted.

The training and equipping of the SANG combined arms battalions with the equipment listed on Figure 4 completes Phase II of the modernization program. SANG is considering a further modernization

FMS FURNISHED EQUIPMENT

SANG MODERNIZATION PROGRAM

MAJOR ITEMS

ITEM DESCRIPTION	QUANTITY
ARMORED CAR, V-150, (ALL TYPES)	420
HOWITZER, LIGHT TOWED 150MM	22
VULCAN (BVADS)	30
CANNON 20 MM-OERLIKON (V-150 MOUNTED)	14
CANNON 90MM-MECAR (V-150 MOUNTED)	39
TOW MISSILE SYSTEM (V-150/GROUND MOUNTED)	29
MORTAR, 81MM (V-150/GROUND MOUNTED)	40
MACHINE GUN, CAL .50 M2	333
MACHINE GUN, CAL .50 (V-150 TURRET MOUNTED)	54
MACHINE GUN, 7.62MM (V-150 TURRET MOUNTED)	110
TRUCK, CARGO (ALL TYPES)	436
TRUCK UTILITY (LANDROVER)	120
RIFLE RECOILNESS 90MM	72
MACHINE GUN 7.62MM (GROUND MOUNT)	32
SUBMACHINE GUN 9MM	820
RIFLE 7.62 MM	2308
PISTOL 9MM	746

(SOURCE SANG PROJECT MANAGER'S MASTER PLAN)

FIGURE 4

effort — Phase III - which would involve upgrading the modernized CAB's with track vehicles (armored personnel carriers/main battle tanks) and further modernizing of SANG battalions not presently equipped as are the present CAB's. The time period for Phase III follow-on modernization will be 1986-1990 if its undertaken. Negotiations are presently underway between both countries regarding the new effort. It will involve congressional approval because of its scope and value. However, the SANG program is not controversial as was the Saudi AWAC's program and should be approved when and if it is requested.

FINANCIAL CONTROL OF FMS CASES

As was mentioned earlier all aspects of the SANG modernization effort are paid for by the Saudi Arabian Government. However, given the fluidity of the SANG program, the bureaucracy of both governments and the unprogrammed requirement that continues — even today — to affect the program, funding was a nightmare! PM-SANG, as a result of some innovative thinking and hard negotiating with both SANG and U.S. Government agencies, was able to establish one FMS case to cover almost the entire SANG modernization effort. It involves setting up an umbrella FMS case S1-B-ZAC with various amendments (1-2-3-4) to cover different concerns. Definitive hardware and contractor support were handled by assigning sub-cases under the basic case — ZAC. It was and is a relatively simple system. However, it is non-standard and continues to create problems within the U.S. financial system. But thanks to the close coordination between all key players and the intense management of PM-SANG, it continues to be a very successful management tool. The number of sub-cases vary according to the needs of the modernization program. There have been as many as 69 separate sub-cases. Figure 5

SUMMARY OF FMS SUB-CASES OF ZAC

CASE	COMMAND	CASE VALUE
WEI	OPM SUPPORT	$ 136,408,730
WEJ	CONTRACTOR SERVICES	505,501,940
WEK	FREIGHT FORWARDER	56,005,826
WEL	TRAINING AIDS	350,000
WEM	DLA/GSA MATERIAL	1,427,000
WEN	NON-STD REPAIR PARTS NCAD	114,967,000
BBT	BOE US STD PARTS	80,653,000
TCE	TAG	160,000
WEA	ARRCOM (WEAPONS)	26,518,000
WEB	ARRCOM (AMMO)	435,994
WEC	CERCOM (US STD)	12,331,000
WED	CERCOM (FOREIGN EQUIP)	34,316,000
WEE	MICOM	49,616,000
WEF	TARCOM (STD AUTO)	19,861,000
WEG	TARCOM (US NON-STD)	112,353,000
WEH	TSARCOM	1,257,000
	TOTAL ZAC-5	$1,250,200,000

FIGURE 5

presents an actual overview of the 1.2 billion dollar Phase II effort. A unique aspect of the SANG program is the fact that equipment and contractor services other than U.S. origin are utilized. Some examples of non-U.S. procurement are:

Recal Tactical Radios (England)

Mecar 90MM Gun (German)

Cockerill 90MM Gun (England)

Oerlikon 20MM Gun (Swiss)

Styer Trucks (Austria)

There are various factors that affect the decision to procure "off-shore"; the decision of SANG can be influenced by unit cost, availability, influence by contractors, internal government guidance and in some cases advice from British and U.S. advisors.

CONTRACTOR SUPPORT

The success of the SANG modernization effort rests to a great extent on the skills and perserverance of the various contractors involved along with the overall level of project management effort employed by the U.S. Army. This was a major program involving large numbers of diversified personnel operating in a foreign country on an initial effort to organize, equip and train with essentially civilian personnel. Contractor personnel were essentially divided into four levels:

LEVEL I - Highly skilled engineers, technical reps or managers (officer equivalent).

LEVEL II - Middle managers (NCO equivalent), skilled blue collar workers.

LEVEL III - Personnel highly trained in the user of various weapon systems (soldier MOS equivalent) at all levels -- operation, maintenance, instruction.

LEVEL IV - Third country national (TCN) who in some instances also operated in the Level I-II-III areas.

Contractor efforts over the years have varied from approximately 1000-1400 depending on the work load. Initially, there were three prime contractors involved in the SANG modernization effort: Vinnell Corporation, Cadillac Gage Corporation, and General Electric Company. Each had a unique specific mission.

Vinnell essentially established as a para-military organization responsible for the total education of the SANG military officer and enlisted personnel to train, operate, maintain, and use major weapon systems in an effective manner in accordance with U.S. Army standards. In order to accomplish this Vinnell structured itself along the lines of the U.S. military -- officer equivalent and NCO and enlisted man equivalent. It was and continues to be an effective training force structure.

Cadillac Gage was responsible for the operation and maintenance of the V150 armor car to include operator training.

General Electric was responsible for the operation and maintenance of the 20MM Vulcan Air Defense System, including the 3 dimensional Vulcan trainer located in a domed building. Each contractor's efforts were rigorously monitored and documented by PM-SANG to insure that all training, maintenance and support were in accordance to contractual agreements and U.S. Army standards. Over a period of time the Vinnell Corporation developed a level of expertise with the V150 armor car and 20MM vulcan gun and subsequently bid on the entire project themselves. Since 1980 Vinnell Corporation has been the prime contractor for the

SANG modernization effort under the auspices of PM-SANG. Almost all of the U.S. Vinnell personnel are either retired military or a previously highly trained soldier with the MOS skills needed for the SANG program. There were, of course, numerous pay incentives to attract the success of contractor efforts - quid pro quo.

ANALYSIS

The project for modernizing the Saudi Arabian National Guard has been a success story. The SANG has the capability to respond to meet its mission:

-- Defend vital installations

-- Maintain security and stability within the Kingdom

-- Protect the royal family.

It has demonstrated its abilities and resolve on numerous occasions, most notably in its response to the Shite disturbance at Mecca in November 1979. V150 vehicles were airlifted from Riyadh to Mecca in a matter of hours. SANG personnel engaged the Mecca disrupters and assisted in neutralizing them. Members of SANG participating at Mecca were honored by recognition from the royal family.

In addition, the CAB's continually train in large scale maneuvers including interface with the Royal Saudi Air Force. They continue to perform well in field exercises and SANG appears to be on the way to total modernization of one level or another for all of its regular and irregular units. Scarce personnel resources will continue to plague SANG's modernization efforts since it must also sustain those units it has modernized. SANG's problems are even more critical when you recognize its manpower is strictly obtained from the Bedouin tribes. In

addition, the availability of funds will be a problem for the Saudi defense structure much as it is in most countries. However, the unstability of the region such as the Iran-Iraq War, the Sunni-Shiite religious conflict, the situation in Lebanon, the Arab-Israeli concerns along with the presence of the USSR in the region mandate the Kingdom of Saudi Arabia maintain a strong military force. Because of the internal politics of the Kingdom, the SANG can be expected to continue modernization for many years to come. The countries of the region are to a great extent caught in the same vicious circle of armament as the super powers — as one country improves its military capacity so must the other in order to maintain deterence. Consequently, the level of security assistance to the Kingdom for support of modernization of SANG will continue to be a high priority program by both countries since it is in their best interests.

A close look at the results of the last ten years of the SANG program provide an interesting insight in two distinct areas, one hardware oriented the other a management concept. In the case of hardware, it is the effectiveness and versatility of the armor car. With the management concept, it has been the innovative force structure melded together by the U.S. Army and industry to provide the framework to produce an effective fighting force based on U.S. Army standards with only a small military presence.

The United States can benefit from both of these areas in their global strategy if they would selectively consider their applications in solving or reducing certain United States concerns in the following areas: one the need for a light armor vehicle, and secondly the ability to readily improve the military capability of friendly countries

throughout the world via U.S. project management. The following comments are submitted for consideration in how this could be accomplished in these two categories.

ARMOR CAR

One of the major reasons for the success of the SANG program has been the selection of the armor car as its prime weapon platform. The armor car has allowed SANG to modernize and field a highly mobile force with adequate firepower to meet its mission. The ability of SANG soldiers, many of whom had never driven a car, to learn how to operate and maintain the V150 in a proficient manner was instrumental in the success of the program. This was especially true given the background of the SANG recruit — Bedouin tribe. There is a valuable lesson to be learned by the U.S. Army as a result of the success of the armor car in the SANG program — there is a role for the armor car in modern warfare. A light armor vehicle/car will increase the ground mobility, survivability and firepower of infantry units. The vehicle can be produced in several versions: designed for use in antiarmor, direct and indirect fire, command and control, and recovery operations. Furthermore, a lightly armored vehicle protects its occupants from small caliber weapons fire and fragments from exploding artillery projectiles, grenades and other munitions. In addition, they are lightweight in comparison to present U.S. Army armor and capable of being air lifted not only with C141 and C5 strategic aircraft but more importantly can be lifted by the C130 aircraft. This fact is extremely important since it allows intra-theatre airlift of various configured armor cars to respond the 'hot spots' within a region or area of responsibility. There are numerous reasons for selecting the armor car as either the core or prime

weapon system for a mechanized or light armor unit. These are:

Cost — Armor cars are substantially lower in cost than track vehicles. The actual unit vehicle cost would be driven by the configuration selected. For example, the V150 procured for SANG cost between $118,000-$160,000 including spare parts (SANG FMS Cases WBR, WBC for V150 cars). This is substantially lower than the M113 or M60 series of track vehicles than available. The cost comparison of armor cars to track vehicles in 1985 would still be in favor of the armor car when compared to the much higher cost of either the Bradley, M-2 Infantry Fighting Vehicle or the M-1 Abrahms Main Battle Tank.

Maintainability/Reliability — The operational readiness reports for the SANG armor cars has averaged over 90% based on PM-SANG data. The yearly repair costs for the SANG fleet of over 400 vehicles averaged $4,380 per car. This figure included repair parts, labor and contractor overhead. The cost per year to maintain an armor car is less than 50% for a track vehicle based on a 1980 TACOM study.

Transportability — The armor car is highly mobile and can be readily moved long distances without the use of heavy equipment transporters or trains as is the case for track vehicles. In addition, armor cars can be airlifted by either heavy helicopter (CH53 type) or C130 aircraft.

Ease of operation — The armor car, unlike a track vehicle, can readily be operated by anyone capable of driving a car. This is a significant factor when dealing with nations that have not developed a highly skilled military force in the use of mechanized equipment. A vehicle such as the armor car is an excellent system for transition to a mechanized force because it is simple, easy to operate, and is not

intimidating.

In short, the armored car is a very cost effective way to field a highly mobile force capable of mixed firepower at a reasonable cost. In addition, it does not demand a highly skilled individual to operate or maintain. It has proven to be a very capable weapons platform for SANG whose combat readiness is measured against U.S. Army standards. As mentioned earlier in this report, SANG has responded to threats within the Kingdom by airlift of various configurations of V150's by C130 hundreds of miles (Riyadh to Mecca) in a matter of hours to assist in neutralizing the attack on the Holy Mosque.

The ability to readily airlift an armor car(s) should make it attractive to the U.S. Army which has a major problem with moving its family of heavy armor vehicles in sufficient numbers to be responsive to a commander's needs in a combat situation. The M-1 tanks can only be lifted by C5H aircraft (1M-1 per C5A). The M-2 FIV can be readily moved by C5A, but if a C141 is used for lift, the turrent must be removed and reinstalled upon landing. In either case lift must be accomplished by strategic aircraft which limits landing at major fields which can handle heavy aircraft. In a region such as the mid-east that could place armor hundreds of miles from where it is to be employed This would necessitate the additional movement requirements of either rail or heavy equipment transporters. On the other hand an armor car rapid reaction force would by virtue of its lightweight and mobility and weapons mix provide a commander more versatility in a shorter period than heavy track armor.

I am not advocating replacing tracked vehicles (tanks/APC's) with the armor car, but rather using it in an appropriate supportive role(s). Some roles I submit for consideration are:

(a) Prime weapons system for initial deployment of rapid deployment force. Its ability to be airlifted by C130 allows it to be flown right to the "battle." Its versatility of configuration would allow selection of any weapon system needed -- TOW, cannon, vulcan, chain gun, etc.

(b) For use with the new light infantry divisions presently being formed. I realize that the new HMMWV is being considered but the armor car will provide more protection to the infantry from small caliber weapons fire and fragments from artillery. The HMMWV will not unless it is armor plated and that offsets its selection as an inexpensive light tactical vehicle. In addition, an armor car is a more versatile weapons platform.

(c) Augment present U.S. mechanized units (tracks). The armor car could be used as a "scout" for the heavier track vehicle and provide an area of coverage (hundreds of miles) that tracks could not be committed to cover for operation and maintenance reasons.

(d) Rear area protection -- The armor car is ideal to provide protection to air fields, ammo supply points and war reserved equipment. Once again its versatility as a weapons platform allows it to be configured for specific missions.

It is ironic that the armor car, which has been so successful in the SANG modernization efforts project managed by the U.S. Army, is not in the Army inventory. In fact, the U.S. Army is the only major army in the world that does not use an armor car in its force structure. Armor cars and half-tracks were used extensively by the Army through World War II. After the war, the use of wheeled armor in the U.S. Army ground to a halt. There was a brief use of the V100 armor car by the U.S. Army in

the initial period of the Vietnam War. However, only a few V100's were procured and they were offered to the South Vietnamese for use. The remaining inventory of V100's over the years were provided to U.S. police agencies around the country. There have been no armor cars in the Army inventory for a number of years.

The Army seems reluctant to accept a wheeled vehicle in an armor role. I submit for consideration the fact that the Army withdrew from an agreement to jointly procure a light armored vehicle (LAV) with the U.S. Marine Corps. The need for such a vehicle in the both services was highlighted by the formation in 1979 by President Carter of the Rapid Deployment Force. The joint study for a LAV resulted in a highly competitive "shoot off" that was won by General Motors of Canada. The selection was done by the U.S. Army Tank Automotive Command in 1982. The basic version of the Marine LAV is an eight-wheeled armored car mounting a 25MM bushmaster automatic cannon and a 7.62 machine gun. It has a weight of 14.1 tons and a road speed of 60 MPH — can keep up with M-1 and M-2 track vehicles. The Marine Corps will most likely configure additional LAV's being procured to include anti-tank, air defense mortar and command and control vehicles.

The Army elected not to procure the LAV because it could not be lifted by heavy helicopter or C130 in the configuration that the Army needed — LAV with a capability to neutralize heavy armor. To meet that requirement, initially the Army has decided to mount a TOW weapon on the M551 Sheridan Track Vehicle. The M551's were previously withdrawn from most Army units. The 82nd Airborne was the only unit equipped with M551 which is air deliverable/droppable by C130. However, the M551 still is a track vehicle and as such can be expected to be subjected to the same

maintenance problems all track vehicles share, particularly shock absorbers, sprockets and track pads, when driven over long distances.

The Marines are highly satisfied with the LAV and are procuring additional vehicles. Hopefully, the success of the armor car in the Marine Corps inventory will influence the Army into adding the armor car to its inventory.

U.S. PROJECT MANAGEMENT IN SECURITY ASSISTANCE

The U.S. has a coalition strategy of defense. U.S. security and well-being are inextricably linked to that of other nations. To make our coalition strategy more effective, we are working to encourage our allies to do more in their own behalf or in cooperation with U.S. in defense of our common interests. Security assistance stands among the most cost-effective means to achieve this goal.

Normally, our security assistance efforts are involved in providing hardware and training on a piecemeal basic with the focal point for overall incountry management being the military assistance advisory group or equivalent located in the recipient country. With respect to large weapon systems or modernization programs, this could entail numerous mobile training teams (MTT) or technical assistance field teams (TAFT) and technical assistance teams (TATS) comprised of mainly military personnel slotted against U.S. Army requirements. It can become a draw down on scare military resources and impact on U.S. Army readiness much as the draw down of scarce repair parts.

I would submit that a more effective way to accomplish this and similar security assistance missions would be to do it through a civilian contractor effort <u>project management by U.S. Army personnel</u> — similar to PM-SANG but on a smaller scale. It would not be a cheap way

to insure effective management, and therefore projects to use the PM concept would have to be those of a high priority to our government.

The cost of security assistance is not cheap either. The FY 1986 budget request for security assistance is for $6.67 billion, much of which is grant aid or FMS forgiven credits which are essentially a grant with no repayment. If select modernization of security assistance customers was accomplished under the auspices of a civilian work force mandated by an Army/DOD project manager, the U.S. would have more effective control of the program. Some examples of this would be:

(a) Organize or strengthen the military structure of select regional allies where a critical military threat exists — Central America and Africa — countries not capable of paying for select management but important to our national interests.

(b) Modernizing friendly developing nations that are procuring highly sophisticated weapon systems not presently in their inventories. We would essentially offer a "total package" to include management. This would ensure the goals of both governments were met in a timely cost-effective manner.

CONCLUSION

The SANG modernization, through U.S. Army project management, has proven to be both effective and successful. Hopefully, it will be the role model for future security assistance endeavors similar in nature. In addition, perhaps the U.S. Army will recognize the advantage of a light armor vehicle and incorporate it into its inventory.

ENDNOTES

[1]Joseph H. Mayton, Cultural Factors in Managing a FMS Case Program: Saudi Arabian Army Ordnance Corps Program. Defense Systems Management College, Fort Belvoir, Virginia, 1977. P. 8.

[2]Memorandum of Understanding Between the Kingdom of Saudi Arabia and the Government of the United States of America, subject: The SANG Modernization Program dated 19 March 1973.

[3]Project Manager's Charter; Saudi Arabian National Guard Modernization Program, dated 17 December 1978, signed by the Honorable Clifford Alexander, Jr., Secretary of the Army.