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FORT LEAVENWORTH, KANSAS

Abstracts Of Master Of Military Art And Science (MMAS) Theses And Special Studies 1964-1976

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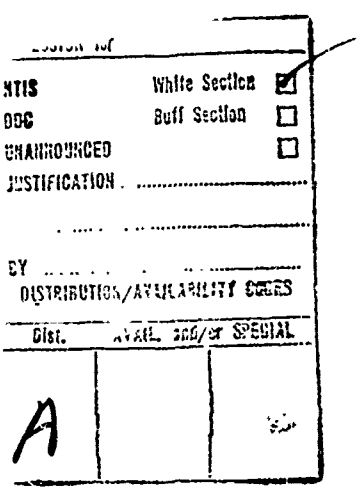
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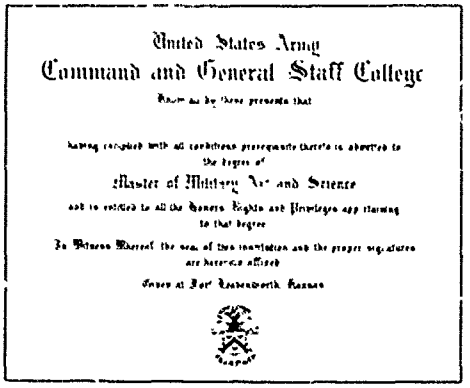
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1964—1976



MASTER OF MILITARY ART AND SCIENCE FOR 1964—1976



U.S. ARMY COMMAND AND GENERAL STAFF COLLEGE
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1. LEADERSHIP IN THE CHINESE COMMUNIST ARMY, by Major A. P. DeLuca, 124 p.

The study of the military systems of nations past and present has long been of primary interest to those in the profession of arms. The writings of history have greatly eased the difficulty of such study through their compilation and evaluation of the events of times past. However, when it comes to the study of the military system of Communist China, history is of little value because, first, the Chinese Communist Army is a new and changing army and, second, the information available to the world outside Communist China is restricted, carefully screened, and barely distinguishable as either fact or fiction. Despite these limitations, this study is an attempt to evaluate the leadership in the Chinese Communist Army today through an historical analysis of certain leadership elements--the leadership environment, the soldier, and the leader.

Military leadership in Communist China is exercised in an environment which emphasizes a policy of Communist Party supremacy over the military. To achieve this supremacy, the Party has provided for a system of collective leadership within the armed forces whereby decisions at most levels are made by Party branches or committees composed of the leading Party members within the unit. To execute these decisions, the Party has established a dual system of command, one military and the other political. With this dual chain of command there is a division of responsibility so that the military commander is responsible for the implementation of military decisions, while the political commander executes decisions relating to political work.

Political control over the armed forces is maintained through constant political indoctrination. In training, political subjects occupy a major portion of the allotted time. Because of modernization in the army and because of the need for greater emphasis on military training brought about by advanced technology, a conflict arose between the political and military leaders over the soldier's time. In a system which depends primarily on political indoctrination for its effectiveness, this conflict was resolved in favor of the political leaders and became a source of dissatisfaction to the military leadership.

Adding to this dissatisfaction has been the disruption of the modernization of the army as a result of faulty economic policies of the Communist government. These policies--the Great Leap Forward and the system of communes--resulted in a decrease in troop morale and a serious shortage of military supplies and equipment. Compounding the criticality of these effects was a growing resentment of the military leaders towards the Party leadership because of the diversion of military manpower to the performance of nonmilitary tasks. Together with a growing rift between Communist China and the Soviet Union which brought a virtual halt to the receipt of modern military equipment, the sum total of these Party actions was a decline in the combat readiness of the armed forces in 1959. To an officer corps that had begun to achieve a degree of professionalism this decline triggered resentment of Party interference in military affairs. Through a campaign of purge and rectification, and by increased political indoctrination of the officer corps, the tendency of the officer corps towards professionalism was halted and

political supremacy over the armed forces was emphasized.

Despite the obstacles to military leadership that the environment presents, the military leader in the Chinese Communist Army benefits from many aspects of the Communist system in the exercise of his command functions. To begin with, he is given a soldier who is willing to serve, is physically capable, and has been accustomed to a life of hardship. The political reliability of this soldier and the constant indoctrination of the Communist control system insures his ready responsiveness to the demands of the Party leaders. The favorable treatment of the soldier adds to the desirability of army service and promotes a willingness to follow orders. With the basic education that the soldier receives prior to beginning his military training, he is capable of absorbing the technical instruction necessary in a modern army.

On the negative side, the average soldier is a conscriptee who is returned to civilian life at about the time he is properly trained. This presents a requirement for a constant and intense training cycle during which the military leader competes unsuccessfully with political demands for valuable training time. Further negating the leadership position of the officer is the tool which the Party uses to maintain the morale of the soldiers, that is the emphasis on the democratic nature of the army, a principle which tends to destroy the prestige of the officer and lower his morale. Under this principle, the soldier has the right to openly criticize the leadership and express dissatisfaction over the actions of the commanders. Although the existence of policies such as this might draw criticism from other modern armies, the Chinese Communists have been successful in building a soldier who, willing or not, is capable of waging war in furtherance of the Party's objectives.

As for the leader himself, he has been the victim of the Communist system and of the Party's measures to maintain the loyalty of the soldiers. Although the officer corps has succeeded in obtaining a system of ranks that provides some distinction from the rank-and-file, it has been unable to emerge as a separate and distinct class of professional militarists. Modernization demanded an army which was completely devoted to military affairs, and an officer corps with the professionalism to exercise leadership of that army. With the threat that any such professionalism posed to continued Party leadership and supremacy over the army, measures were taken by the Party to reemphasize its belief in the system of collective leadership and the traditional unity of the officers and men. The officers had criticized collective leadership as being unsuitable to the rendering of the swift decisions required by modern warfare, and democracy as failing to provide the discipline necessary to survive on the battlefield of the future. These measures have apparently succeeded in maintaining the officer in a position as executor of Party policy and decisions and preventing his emergence as an individual leader.

A summation of the characteristics of the leadership environment, the soldier, and the leader, provides a picture of the military leadership of the Chinese Communist Army. It is a type of leadership quite unlike that

in existence in any of the Western armies. Except in extreme emergency when the commander is authorized to exercise individual leadership, the army is operated under a system whereby decisions are made by Party branches and committees and executed through a dual chain of command--one military, the other political. The effect of this system is the destruction or at least submergence of any tendencies towards individual leadership. The system is not one which fosters initiative or promotes personal ambition among the officers, nor does it lend itself to the development of decisions.

The personal effectiveness of the military commander as a leader is dependent in large measure on his standing within the Party, his influence with the Party branch or committee, and his relationship with his political counterpart who is theoretically his equal but actually occupies a position of dominance. The military commander bears the responsibility for the military affairs of the unit but lacks the corresponding authority and prestige to accomplish his tasks through personal leadership. Because of the stress of democracy within the army, the gap between the military leader and the soldier caused by the image of the political commander as the benefactor of the men, there is an absence of any sound relationship between the military commander and his men on which potential individual military leadership may be built. The loyalty of the soldier is to the Party rather than to the unit or its commander. Esprit de corps is not fostered for its development would focus attention on the more capable officers and give them a power which the Party does not want them to have.

It is concluded that the typical commander is an individual dedicated to his profession and aware of the complexities of modern war. His desire to achieve maximum proficiency of his unit is handicapped by the many factors which are at the same time the strength of the Communist system, namely the dependency on political control for all decisions, the use of the systems of collective leadership and dual command, the maintenance of the morale of the soldier at the expense of causing dissatisfaction among the officers, adherence to the principle of democracy within the army and stress on leadership by patient persuasion, and the continuing use of the army for nonmilitary tasks. He is impatient with Party policies that have brought a halt to modernization and prevented the modern equipping of his unit; he is fearful that continued reliance on outdated military doctrine will be fatal in a general war situation; he is frustrated by the responsibility which he bears for the success of his unit without having control over the many factors that will achieve or prevent that success.

In future combat the effectiveness of the military leadership will depend on the efficiency of the Party and the control system it has established more so than on the personal characteristics of the commander. Should the political system fail or break down at any point, and should the leadership responsibility fall directly on the military commander, the degree to which he has permitted political requirements to overshadow his attempts at professional excellence may well determine victory or defeat.

2. IMPACT OF GERMAN MILITARY RESISTANCE MOVEMENTS UPON FIELD COMMANDERS OF THE GERMAN ARMY, 1933-1944, by Major George D. Hardesty, Jr., 108 p.

A revolutionary tradition did not exist in the Imperial German Army. But during the years 1918-1944 events occurred which produced such an impact on the moral fibre of the German Officer Corps that eventually a few of them participated in a conspiracy against Hitler. This work seeks only to throw light on those aspects of German military history that portray the gradual disintegration of the monolithic structure of the German Army that occurred prior to 20 July 1944.

The study has been divided into four major parts: the revolutionary days following the defeat of World War I, 1918-1920; the development of the Reichswehr and the rise to power of Hitler, 1920-1933; the transition from Reichswehr to Wehrmacht, 1933-1938; and the period of active opposition to Hitler, 1938-1944. The analysis, generally, follows a chronological course, and results in an examination of those events which influenced the German officers who were the field commanders of World War II.

The initial period revolves around the early days of the Weimar Republic and the efforts of the General Staff to restore order following the defeat in World War I. During this period the German Army was augmented by independent "Free Corps" units, some of which were comprised of revolutionary elements, and out of which arose a threat to the existence of the German Army.

The second period centers around the dominant personalities of Generaloberst Hans von Seeckt and Generalmajor Kurt von Schleicher, the former responsible for the development of the Reichswehr. While Chief of the Truppenamt or General Staff, General von Seeckt brought order to Germany and provided the stability that offered the leaders of the Weimar Republic an opportunity to establish an effective government. He created a "leaders" army, reintroduced the strategy of mobile warfare, and attempted to separate the Officer Corps from domestic politics. He sought to reestablish Germany as a world power, and, in so doing, evaded the military provisions of the Treaty of Versailles. Junior officers under General von Seeckt could not fail but observe the treaty violations and secret rearmaments. Thus, the Prussian traditions of discipline, duty, and honor that General von Seeckt hoped to develop were undermined to some extent by General von Seeckt himself.

General von Schleicher, on the other hand, attempted to use the Army to arbitrate political disputes. Lacking the full support of the Officer Corps, General von Schleicher used the "unpolitical" Army created by General von Seeckt to influence domestic political decisions. Unknowingly, his political maneuvers assisted Adolf Hitler's legal ascendency to power.

The third period begins on 30 January 1933, when Adolf Hitler became Chancellor. There is no evidence that the German Army or its leaders had been active in bringing Hitler to power. Once in office, Hitler maintained

good relations with the leaders of the Army, and any conflicts between the Nazi Party and the Army were resolved on 30 June 1934 when the Sturmabteilung (SA) was purged by Hitler. During the purge, however, General von Schleicher was murdered, an act passively accepted by the Officer Corps with a resulting stain on their honor.

The SA was replaced by the Schutzstaffel (SS) which was to develop further as Hitler's private Army. The two forces competed for recruits, equipment, supplies, replacements, even for missions.

President Hindenburg died on 1 August 1934. On 2 August, the Army took the Oath of Allegiance to Hitler personally. An oath which was not dissimilar to the one taken to the Emperor prior to 1918. The inviolability of the oath had a special significance to the German Officer Corps. What the German Officer Corps did not recognize was that Hitler never considered seriously his reciprocal responsibility to the German nation.

Soon after taking office, Hitler decided to abrogate the military provisions of the Treaty of Versailles. This action was followed by an expansion of the Army from a 1,000,000-man strength in 1933 to 2,300,000 in the German Field Army alone by 1939, an expansion of 23 times its original size in six years. The leading members of the Army, including Generaloberst Freiherr Werner von Fritsch and General Ludwig Beck, expressed opposition to a too rapid expansion and the resulting deterioration of professional standards. But Hitler, determined to permit no opposition to his military policy, would not accept words of caution.

Extremely fortunate circumstances played into Hitler's hands during the months of January-March 1938 in the form of the "Blomberg-Fritsch" crisis. Hitler seized the opportunity to remove the two most senior Army officers from office and to overcome Army opposition to his regime. The significance of these two events had a direct impact on the moral fibre of the Officer Corps. Hitler took command of the Wehrmacht himself, "declaring that he had lost confidence in the generals."

The fourth period concerns the period of active opposition to Hitler, the years from 1938-1944. For the first time, senior German officers began to oppose Hitler actively, initially by legal means, later as conspirators. On 31 August 1938 General Beck, Chief of the General Staff, resigned in protest to Hitler's planned foreign policy. Shortly thereafter, General Halder, who succeeded General Beck, received two important policy changes introduced by Hitler, changes which removed the Army High Command from its traditional influential position within the State.

The campaigns of World War II and the simultaneous plots to kill Hitler are not discussed in detail. Of the various campaigns of World War II, four are of importance to this thesis: the successful 1940 campaign in France; the almost simultaneous disasters at Stalingrad and in North Africa; and the Allied breakthrough at Avranches. The French campaign of 1940 seemed to completely vindicate Hitler's judgment, and those officers who had feared the consequences of such an attack were thoroughly discredited. But the

ever accelerating disintegration of the monolithic structure of the German Officer Corps was already firmly underway. As a result, in the fall of 1940 the military situation in France was not as favorable for Germany as purely outward appearances seemed to indicate.

The disastrous results of Hitler's aggressive policies were felt by all Germans following the defeats at Stalingrad and in North Africa. There is ample proof that the German Officer Corps maintained a high degree of organizational integrity and fighting effectiveness through the long series of almost unbroken retreats that followed the military reverses at Stalingrad in the East and later at Avranches in the West. But at the same time, elements of the Officer Corps were engaged in the conspiracy that finally found expression on 20 July 1944.

In conclusion, then, there was a gradual decline of the German military ethic which began as early as 1914. Thereafter, a series of events influenced the basic concepts of the Officer Corps. By 1944 the impact of these forces, coupled with Hitler's illegal policies, his continuous assaults on the integrity of the Officer Corps, climaxed by his inept invasion of their professional control over the tactical conduct of the war, could not help but provoke not only opposition, but resistance.

In this tragedy, it would appear that the German Officer Corps was less to blame for its actions--or lack of action within the broader framework of the German nation--than has often been believed to be the case, primarily because the actions of the officers were often the result of factors beyond the control of soldiers. Such a conclusion may be at variance with that of other writers on the subject. The weight of evidence examined, however, will not support a different conclusion, particularly when one analyzes the conduct of tactical units at Field Army and lower echelons of command.

In this century the soldiers of the German Army have undergone two severe tests. It remains only for history to establish the answer to this question: Has this been the German Army's guilt or the German Army's fate?

"Whom the gods would destroy they first made mad" - Euripides.

3. THE 24TH INFANTRY DIVISION'S NAKTONG RIVER CROSSING IN SEPTEMBER 1950, by Major John Emory Hurst, Jr., 123 p.

At 0400 on the morning of 25 June 1950, the North Korean People's Army (NKPA) launched a violent attack across the 38th parallel against an ill-prepared Republic of Korea (ROK) army. Realizing that the South Koreans could not defend themselves, the United States through the United Nations reacted swiftly. On 2 July, a battalion task force, dispatched to Korea to delay the North Korean onslaught, contacted the enemy; but the outnumbered Americans were no match for the North Korean division spearheading the Communist attack down the Suwon-Taejon axis. The defeat of Task Force Smith north of Osan was the first reversal in a succession of defeats that were to follow while 8th Army sacrificed ground to gain time in an effort to build

up its forces on the Korean Peninsula. By 12 July, the entire 24th Division had arrived in Korea; and within the next 1½ months, the 2d and 25th Infantry and 1st Cavalry Divisions had arrived together with the 1st Marine Brigade and two separate army regimental combat teams.

On 1 August, 8th Army withdrew behind the natural barrier of the Naktong River on the west and the mountains from Waegwan to Pohang-dong on the north. Here the army fought a dogged defense for 1½ months while the NKPA bled itself in repeated attempts to drive 8th Army off the Korean Peninsula. As late as 8 September, Lt. Gen. Walton H. Walker, Commanding General, 8th Army, was still shifting his forces to counter North Korean attempts to penetrate the perimeter. While 8th Army was fighting for its very existence in the Pusan Perimeter, 8th Army staff officers were busily engaged in planning an operation to assume the offensive.

The scheme by which 8th Army was to break out of the perimeter involved a coordinated attack all along the front with 1st Corps making the main effort along the Taegu-Kumchon-Taejon-Suwon axis to link-up with 10th Corps which was to make an amphibious assault at Inchon. First Corps headquarters did not arrive in Korea until 6 September, yet became operational on 12 September. On 13 September the 1st Cavalry Division, the ROK 1st Division, the 5th RCT (less one battalion), and corps engineer support units were attached to 1st Corps. Not until the eve of the attack was General Walker able to shift the 3d Battalion, 5th RCT, to the Taegu sector; and it was after the attack had started when the 24th Division and engineer support units arrived in the area. General Walker could mass combat power under 1st Corps command only by piece-mealing units into the area, for the entire 8th Army front was still under continuous pressure from the North Koreans.

On 16 September at 0900, 8th Army's Operation Plan 10 to break the North Korean's stranglehold on the defensive perimeter was implemented. At this time, the 5th RCT, that had been attached earlier to the 1st Cavalry Division, moved from its assembly area west of Taegu, attacked west from a shallow bridgehead across the Kumho River toward the Naktong River, then turned north and advanced toward Waegwan. By 18 September, all three battalions of the 5th RCT were committed in a full-scale assault on Hill 268, the commanding terrain south of Waegwan. Against still opposition, the 5th RCT stormed Hill 268 and secured Waegwan on 19 September. The following day, the 2d Battalion, 5th RCT, occupied Hill 303, the high ground north of the town. With Hill 303 secured, the 5th RCT had cleared in five days the east bank of the Naktong River from West of Taegu to Waegwan.

The task to clear the Taegu-Waegwan road north of Taegu, a vital artery in any scheme to advance toward Taejon, fell to the 5th Cavalry Regiment. This regiment, like the 5th RCT, attacked on the morning of 16 September, but was stopped the same afternoon. In an effort to regain momentum, the 2d Battalion, 7th Cavalry, was committed between the 5th Cavalry and the 5th RCT. Not until 19 September after bitter fighting did the 2d Battalion succeed in taking Hill 300, the controlling hill mass north of the Taegu-Waegwan road. With the enemy pushed north of Waegwan, the 5th RCT and the 2d Battalion, 7th Cavalry, had secured the area through which the 24th Division was to pass in its assault crossing of the Naktong River.

Massing the 24th Division for a thrust to the west, however, was a complex gamble; for as late as 15 September, elements of the division were still in blocking positions in the vicinity of Kyongju. By 17 September, the division (less one battalion still in army reserve) had been assembled in the vicinity of Taegu. On this same day, the division received its mission: to force a crossing of the Naktong River in the vicinity of Hasan-dong, attack to the north and northwest to secure a bridgehead near Waegwan. The 21st Regiment, the only complete infantry regiment in the 24th Division at the time, was given the key role in the crossing. It was to cross the river at Hasan-dong and approximately 5,000 yards north and attack to the north after establishing a bridgehead. The 19th Infantry, together with the division reconnaissance company, was to follow the 21st Infantry across the river and protect the approaches to the bridgehead from the west. But what had been carefully planned was to be altered drastically in the subsequent forty-eight hours, primarily because engineers had concentrated their attention on the Naktong River and had overlooked an apparently innocuous stream--the Kumho River. The oversight had been unintentional, however, because sufficient bridging to span only the Naktong River was all that 8th Army could spare 1st Corps; the crossing of the Kumho and consequently the Naktong were delayed.

Early in the afternoon of 18 September, the 21st Infantry started its motor march from the Taegu airstrip to assembly areas east of the crossing sites. By late afternoon, traffic on the single road from Taegu had backed up five miles from the Kumho River toward Taegu. The improved ford and one raft across the Kumho River proved insufficient to accommodate a regiment moving into the attack. Earlier in the afternoon, 24th Division staff officers became convinced that the 19th Regiment would never reach the river in time to support the 21st Regiment; therefore, the crossing plan was changed. The 21st Regiment would cross at only one site. Because the infantrymen did not start arriving at the crossing site until 2300 and assault boats did not arrive until 0400, Colonel Richard W. Stephens, Commanding Officer, 21st Regiment, postponed the crossing two times during the night and finally set a new H-hour at 0500 on the morning of 19 September. The 21st Regiment, crossing at daybreak, met stiff opposition initially, but once across the river had little difficulty in securing its bridgehead and advancing north on the west bank of the river toward the Waegwan-Kumchon road. The 19th Regiment crossed the same day at 1600 at Hasan-dong, meeting no opposition on the west bank but suffering heavy casualties from mortar and artillery fire on the near shore.

On the morning of 20 September, the 24th Division had the elements of two regiments across the Naktong River; and by evening, the 5th RCT was crossing north of Waegwan. The line of communication, however, remained a problem. Earlier on 19 September, elements of the 11th and 14th Engineer Combat Battalions had combined efforts to improve the Kumho River crossing with semipermanent bridge. In addition, starting at 0800 on 21 September and working for twenty-six hours, elements of the 11th and 3d Engineer Combat Battalions and the 55th Treadway Bridge Company constructed a float bridge across the Naktong River at Waegwan. As soon as the bridge opened on the morning of 22 September, an endless stream of 24th Division traffic moved over the bridge to the west throughout the remainder of the day.

By midnight on 22 September, the bulk of the 24th Division was on the west side of the river moving toward Kumchon.

As the 24th Division stood poised to drive on Kumchon, however, the British Commonwealth 27th Brigade that had been attached to the division on 20 September and given the mission to seize Songju and protect the south flank of the division ran into unexpected resistance. Crossing the Naktong on 21 September under heavy artillery fire over a makeshift footbridge, the 27th Brigade advanced on Songju from the east. After an unsuccessful and costly attack to occupy the high ground east of Songju, the brigade withdrew into defensive positions west of its crossing site. Songju was not secured until the following night when the 19th Regiment, advancing southwest from Waegwan and south from Pusang-dong, struck at the backbone of the North Korean defenses in the area. The two-pronged attack dissolved the last resistance that threatened the 24th Division's Naktong River bridgehead.

In ten days, starting with the 5th RCT's attack toward Waegwan and concluding with the 19th Regiment's securing Songju, the 24th Division and its attached units had crossed two rivers, defeated an enemy that had previously pinned the division to the defensive for two months, and were about to launch a pursuit that would take the division in an uninterrupted advance to the far reaches of North Korea.

4. CLOSE AIR SUPPORT FOR THE FIELD ARMY, by Captain Francis A. Ianni, 149 p.

The purpose of this study is to examine the doctrine for providing close air support to the field army in the North African, Mediterranean, and European Theaters of Operations during World War II. The study attempts to show the forces and events which affected the formulation of this doctrine of close air support.

The study covers three broad periods: (1) the early developmental period of close air support doctrine, (2) the first test of doctrine in Africa, and (3) the period after the radical change in doctrine which took place in Africa.

The roots of the close air support problems encountered by the American Army fighting the Nazi forces in World War II are found in the early history of American military aviation.

The American air arm in World War I had only a few months of combat experience. This was enough, however, to convince its leaders of the tremendous potential of aviation as a weapon of war. One of these leaders was General William Mitchell, who soon came to believe that it was possible for an air force alone to win wars by means of long-range strategic bombing. He felt that it was necessary to have a separate air arm in order to carry out this type of warfare. In his efforts to have the air arm established as a separate force, General Mitchell was guilty of indiscreet actions in his public utterances. His court-martial and the resulting attitudes which it left within the armed forces complicated the problem of arriving at a satisfactory integration of air and ground warfare.

The War Department doctrine reflected the limited capability of the available aircraft. The mission of the air arm was to aid the advance of the ground forces. Meanwhile, Air Corps doctrine showed the influence of General Mitchell's concept of long-range bombing and strategic air warfare. With the advent of the B-17 bomber in the 1930's, the development of aircraft and doctrine for close support of ground forces was to be retarded. Strategic air operations were given primary emphasis.

The outbreak of World War II found the doctrine of close support to be inadequate and untested. Attempts to gain sufficient experience by means of joint maneuvers in the early 1940's were unsatisfactory because of shortages of equipment and trained personnel. There were also differences between the Army and Air Corps over the need for close air support and the requirements for extensive training in this area. Before the question could be resolved, U.S. forces were engaged in combat in Africa in late 1942.

The basis for air-ground cooperation for the operations in Africa was found in FM 31-35. This document was prepared from the limited experiences obtained from the joint air-ground maneuvers of the preceding year. The manual prescribed that ground force commanders would control aviation assigned to provide close support for the ground unit.

The first test of the doctrine in Africa was complicated by severe logistic and political problems. The U.S. 2d Corps was committed over a wide front alongside French and British forces. The air units assigned to support 2d Corps were not adequate for waging a battle for air superiority unaided or for providing satisfactory close air support. Provisions for integration of total U.S. and Allied air effort were inadequate. The result was a lack of success in the overall air effort. The airmen charged that the lack of success was due largely to the system of command which permitted Army control of supporting aviation.

A reorganization to coordinate the air effort in February 1942 resulted in supporting air being removed from ground force control. The ground force commanders were then to complain that they were not being properly supported by air. They felt that they were properly entitled to close support and that integration of air and ground effort was absolutely essential.

At the completion of the African Campaign, the War Department published FM 100-20. This document gave official sanction to the independent role of the Air Corps. The subsequent invasion of Sicily got off to a bad start with the Air Corps conducting its operations without regard to the Army plan. Little progress was made in integrating the air and ground effort during the rest of the campaign in Sicily.

The first concrete step toward providing better and more closely integrated support was taken after the invasion at Salerno, with the integration of air and ground staffs at Fifth Army headquarters. Progress after this was slow. Ground commanders' attempts to obtain some form of mission control to provide better integration of air effort were met by Air Corps reluctance to release control of aircraft to ground units.

As the war progressed, air commanders began to show a greater interest in the problems of close air support. Rapid strides were made in the late summer of 1944 with the near simultaneous experiments with forward air controllers conducted in Italy and Normandy. The use of forward air controllers and other forms of decentralized air control were responsible for the success of close air support in late 1944 and 1945.

The significant shortcomings of the close air support effort were the lack of night fighters and night intruders, the lack of sufficient reconnaissance aircraft, and the failure to make greater use of bombers in the tactical role.

The problem of who should control the air arm has been a paramount question throughout the history of U.S. military aviation. The struggle extended from General Mitchell's early attempts to free aviation from ground force control to the climax reached with the publication of FM 100-20. In striving to obtain its goal of an independent mission, the Air Corps neglected its additional requirement of being able to support the ground effort. This emphasis on its indpendent mission was a major factor in its failure to have a well-developed system for providing close air support at the beginning of World War II.

The failure of the early air effort in Africa was not due to the system of ground control of supporting air. It was due to the logistic and political problems as well as Air Corps doctrine and practices which prevented the full application of the Allied air effort.

The subsequent declaration of independence contained in FM 100-20 prevented effective utilization of air power in the land battle. It was not until the air commanders took a greater interest in the needs for close air support and loosened their control over air missions that an effective system of close air support was developed.

5. COUNTERINSURGENCY: ONE APPROACH TO DOCTRINE, by Major J. F. C. Kenney, Jr., 119 p.

Assume that there are four approaches to the formulation of military doctrine, each applying itself to a different level of activity. These four approaches are philosophical, conceptual, structural, and applicatory. The philosophical approach to the formulation of doctrine provides general rules for the conduct of operations by assisting the commander with a generalized mission analysis leading to a visualization of the operation or the progress of an entire campaign. The conceptual approach is that which translates major tasks into terms of phases, objectives, force structure and development, and the means of controlling and supervising the conduct of the campaign. More specific than either the philosophical or conceptual approaches is the structural approach. This approach assumes tasks and concepts and then provides for the force structure and its employment in each phase of the campaign. This approach concentrates on the combat factors: firepower, mobility, and communications; and the support factors: logistics,

psychological operations, and civil affairs operations as they apply to the conduct of a campaign. The applicatory approach addresses itself to the testing of derived doctrine or the formulation of doctrine from empirical knowledge. This paper presents a philosophical approach to a doctrine for counterinsurgency. More specifically it defines the environment and analyzes the mission of a senior commander of United States military forces, or a senior officer advising the military forces of another nation, engaged in directing military operations during a counterinsurgency campaign.

It is extremely important for the senior military commander to be fully aware of the political nature of insurgency and counterinsurgency because the ultimate solution to insurgency must be found in political action. Since an insurgency can flourish only in an atmosphere of discontent, those who seek lasting success in countering the insurgency must work to remove or reduce discontent by honest political action. Political integrity is the sine qua non of counterinsurgency.

Before one can understand counterinsurgency, he must have a comprehension of the nature of insurgency. This paper examines insurgency in terms of its goal, its levels, and the intensity of activity associated with each of its levels. Establishing at the outset that the goal of insurgency is the overthrow and replacement of established authority, the paper divides insurgency into five levels and then describes the characteristic activities identified with each level. The five levels of insurgency are:

1. Clandestine organization.
2. Psychological offensive.
3. Organized guerrilla warfare.
4. War of movement.
5. External aggression.

For each level of insurgency there is an appropriate level of counteraction. For example, police intelligence work combined with a for of population control is an appropriate activity to counter clandestine organization. External aggression must be countered by a full commitment of conventional forces. Combinations of techniques drawn from between these extremes provide for the proper level of counterinsurgency to meet the various insurgent threats.

If an insurgency threatens, or appears to threaten, the national interest of the United States, in all likelihood there will be some degree of military involvement on the part of this country. Since the application of large forces is an inappropriate reaction to the lowest levels of insurgent activity, the involvement of U.S. military forces in either advisory or a combat role would be unlikely at a level of insurgency lower than organized guerrilla warfare. There is in existence a large body of doctrine to guide a senior commander in the conduct of the conventional military operations best suited to counter a war of movement or external aggression. Therefore, this paper concentrates on formulating a doctrine for countering an insurgency characterized by organized guerrilla warfare.

The mission of the senior commander in such a situation is expressed as three interrelated tasks:

1. He must defeat the insurgent forces.

2. Within the limits of his capability and authority he must eliminate the conditions which caused the insurgency.

3. He must develop and maintain the capability to prevent the recurrence of the insurgency as a military threat from within the nation and from an external source.

The defeat of the insurgent force, the guerrilla, is predicated on the denial of the prerequisites for a guerrilla movement. These prerequisites are:

1. Support from the people.
2. A secure base.
3. Initiative in tactical operations.

The first action toward the defeat of the guerrilla is the denial of his access to the people. For such a denial to be effective, the separation must be accomplished on both the physical and ideological planes.

The physical separation of the guerrilla from its popular support requires two actions. First, a force strong enough to defeat or drive off the guerrilla force must seize the area of operations. Second, that force must remain in the area to prevent the return of the guerrilla so that the physical separation of the people and the guerrilla can complement the ideological separation of the two. Since ideological separation is dependent on the ability of the government to remove the causes of the insurgency, it is discussed in the portion of the paper which deals with that part of the commander's mission.

A second task necessary to defeat the guerrilla is the denial of a secure base. Like the denial of the guerrilla's physical access to the population, the denial of his secure base depends on area control. In his determination of the priorities for areas to be cleared the counterinsurgent commander must take into account what the guerrilla considers favorable terrain. Ideally, the guerrilla base would be located in relatively impenetrable terrain which would still afford him close contact with the people. Of course great benefits accrue to the guerrilla if the base is also located to provide extraterritorial sanctuary.

The denial of a secure base is a matter of occupation, destruction, interdiction, or a combination of the three. However, the denial of the external base, or sanctuary, does not lend itself to occupation or destruction; therefore, its denial must be interdiction. Such interdiction can be accomplished by a number of means ranging from trail ambushes to the physical sealing of a nation's borders and the closing of its seacost. While engaged in the denial of the physical base for insurgency, the counterinsurgent commander must keep in mind that he must deny also the guerrilla's

moral base in the population. Like ideological separation of the guerrilla and the people, this action is discussed in terms of removing the cause of insurgency.

Denying the guerrilla the initiative must also be accomplished on two planes: the political and the military. Although the military counterinsurgent commander may not be authorized to speak and act freely in the political field, he must be fully aware of the importance of gaining the initiative in this field; and he must take every action within his authority and capability to see that it is gained and retained. The counterinsurgent commander can gain the military initiative by constant offensive activity. The essence of this activity is best described as a forcing game in which the counterinsurgent forces maintain a steady pressure on the guerrilla allowing him no rest, no time to plan or to refit.

Once the actions of the counterinsurgent military force have achieved a physical separation of the people and the guerrilla in an area of operations, the counterinsurgent commander must act to remove the cause of insurgency in the area and to restore the authority of the established government. In order to do this the commander must be fully aware of the nature and cause of the insurgency and the quality of the insurgent leadership in the area. In determining the strength of the cause, the factors he must consider are the bases of discontent which gave rise to the cause. This paper categorizes the nature of discontent according to political, social, or psychological conditions. Having determined the form of discontent peculiar to the area of operations the counterinsurgent commander must assess the pattern of insurgent leadership and determine its contribution to the strength of the insurgent movement in the area. Allied with a determination of the pattern of leadership is the system of insurgent population control. Although ideally the people would be motivated by the insurgent's persuasion, practically an insurgency controls its population by a combination of persuasion and threat. The counterinsurgent commander can use the degree of intimidation the insurgent found necessary as an indicator of the relative strength of the cause in the area of operations. A third means of assessing the strength of the insurgency is to determine the degree to which the various segments of the population are committed to the insurgent cause.

Having determined the strength of the insurgent cause in terms of political, social, and psychological conditions, the quality of insurgent leadership, and the commitment of the population, the counterinsurgent commander must accomplish three tasks necessary to winning the support of the people. They are:

1. To continue the separation of the people and the insurgent.
2. To establish effective leadership and administration.
3. To guarantee protection to the leaders and the people.

The physical separation of the people and the guerrilla is continued by various means of population control which complement the physical separation already achieved by the presence of a strong military force. This control may range in severity from roadblocks and curfews to the use of sealed

villages. Ideological separation has as its goal the removal of personal support of the insurgent movement. This is best achieved by improving the in-group loyalty of the population; a system of rewards and punishments authorized by the established order and administered by the local population; personal commitment; and the use, as a government propaganda weapon, of any overt act of the ousted insurgent should he attempt to regain power.

The departure of the insurgent force and the driving underground of its leadership creates a political vacuum the counterinsurgent commander must act to fill with honest administration and effective leadership. If it is at all possible the counterinsurgent commander must attempt to draw on the resources of the local population to fulfill these needs. Of the two means of finding the leaders and administrators, selection and local election, local election is by far the more desirable solution even though it carries a greater short-term risk.

The final task of removing the cause of insurgency is allied with preventing its recurrence. That task is the protection of the leaders and the new political system against insurgent attack. Once the counterinsurgent commander has reestablished the position of governmental authority and gained the support of the people in an area, he must train the self-defense forces and the police forces of the area in those techniques which will prevent the return of insurgent influence. And once the counterinsurgent commander is satisfied that the people of a locality are capable of their own counterinsurgent defense, the regular military force can be withdrawn to begin operations in a new area. At that time the responsibility for the internal security of the area passes to those on whom it has depended all along - the people.

6. AN ANALYSIS OF CIVIC ACTION IN SELECTED UNDERDEVELOPED COUNTRIES, by Lt Colonel Neil B. Mills, USMC, 190 p.

The foreign policy of the United States reflects the importance with which the independence and welfare of the emerging nations are regarded. Military policy contributes to foreign policy in these countries through the activities of Military Assistance Advisory Groups (MAAGs) and Military Missions. These U.S. advisory personnel are able to support both the welfare and independence of underdeveloped countries through the concept of civic action.

Civic action involves the use of military forces on projects that well raise the socio-economic standards in underdeveloped countries. Suitable projects are improvements in the fields of education, training, public works, agriculture, communications, health, sanitation, and public administration. The purpose of civic action is two fold: first, it is intended to raise the standard of living; second, it is intended to improve the relationship between the participating military forces and the indigenous population. Ideally, the participation of U.S. military personnel in civic action in underdeveloped countries is limited to advice and assistance. These MAAGs and Missions,

augmented as necessary, sponsor civic action projects in coordination with the Ambassador and other members of his Country Team.

There have been many civic action projects in underdeveloped countries in recent years, and increasing national interest indicates that there will be many more in the future. In the past, there have been successes and failures in civic action operations; both successes and failures are likely to occur in the future. But, learning from past activities is a logical method of improving those operations that are to follow. Therefore, the purpose of this thesis is to analyze objectively the civic action activities in selected underdeveloped countries. From this analysis the features that have contributed to either successes or failures are isolated. These features are then translated into guidelines to encourage the repetition of the beneficial characteristics and to discourage the use of those that have been worthless or detrimental. These guidelines are intended for the future use of MAAGs and Missions in their execution of civic action. Civic action case studies in the Philippines, Malaya, Korea, Laos, and Vietnam are analyzed.

In the Philippines, Magsaysay integrated civic action into the counter-insurgency operations against the HUKs. He granted land to the reeducated dissidents to counter the Communist battlecry of "land for the landless" and to improve the economy of his country. This was accomplished by the EDCOR Plan under which the resettled HUKs received tracts of previously unused land. Civic action was also employed to gain the support of loyal peasants. These activities included the supervision of honest elections and the provision of legal advice in land courts for those peasants who held doubtful titles to their land. Civic action was successful in the Philippines for two fundamental reasons--it was honestly and ably administered and it was directed to the needs of a receptive people.

The British employed civic action in Malaya as a contributory method of suppressing Communist insurgency. They resettled over a half million Chinese squatters to separate the guerrillas from their logistic sources. Civic action was incorporated into these resettlement projects. The British emphasized the application of civic action at the "grass roots" level from which Communist insurgency seems to so frequently spring. The term "new villages" evolved from this application of civic action to improve social and economic conditions in the resettlement projects. In this manner the British demonstrated the use of civic action as an element of a coordinated effort to suppress Communism, elevate the economy and win public support for the established government.

U.S. military forces in Korea administer civic action through the Armed Forces Assistance to Korea (AFAK) Program. This program is a good example of civic action-type foreign aid being used to contribute to U.S. foreign policy. The AFAK Program serves as a model for other similar civic action activities, and it provides a good example of the rapport that can be established between U.S. forces and an indigenous population.

The case study of Laos illustrates the difficulty of achieving successful civic action in an environment of government instability. The many and frequent changes of government resulted in a series of civic action programs. This discontinuity of administration seriously hampered the improvement of socio-economic benefits. Another deterrent was the national religion of Buddhism which advocates self-denial and passivity. In Laos, these inhibitive social factors were reinforced by impoverished economic conditions and an unstable government. Consequently, the acceptance of civic action was understandably slow.

Civic action has been administered in Vietnam by both the MAAG and the Vietnamese armed forces. The MAAG efforts have been well supported by the U.S. Operations Mission and by outside military augmentation. The deployment of Mobile Training Teams from Okinawa and the United States increased the civic action capability in the four tactical corps areas. Further augmentation was obtained through the test of a concept--that of the Engineer Control and Advisory Detachment (ECAD). Two ECADs were made available to the MAAG by the Army Concept Team in Vietnam. They conducted extensive civic action with considerable success. While the civic action activities of U.S. military agencies have accomplished much, those of the Vietnamese have been less successful. This has been due to a lack of leadership, technical ability, and command interest. Of course, in many cases these shortcomings are the result of the tactical demand for troops for strictly military duties. In other cases the reasons have not been so justifiable.

As a result of analyzing the five case studies of civic action, ten guidelines were developed for the use of officers assigned to duty with MAAGs or Missions. They are listed below in a probable chronological order of application.

1. Undertake self-preparation to become familiar with the concept of civic action and to learn as much as possible about the host country.

2. Understand the U.S. national objectives relative to the host country and how civic action fits into the country plan.

3. Determine the specific needs of the people and orient civic action to those needs.

4. Don't be handicapped by a restrictive definition of civic action.

5. Coordinate with other U.. agencies in the area and work through command channels within the Country Team.

6. Be aware of the external assistance available for civic action.

7. Make every effort to get indigenous military forces to participate in civic action.

8. Be prepared for reluctant acceptance and a lack of interest in continuing civic action projects by the recipients.

9. Don't hesitate to actively participate in civic action projects.

10. Ensure that measures are taken to publicize civic action to indigenous civilians.

7. CORPS OFFENSIVE OPERATIONS AGAINST A CITY, by Major Edward M. Pierce, USA, 133 p.

INTRODUCTION

The purpose of this thesis is to develop a doctrine for offensive operations by a corps against cities. Source material is both historical and doctrinal in nature.

The city is important to the modern army as a source of personnel and materiel. The city often has tactical importance as a communication center. A review of World War II field orders reveals that cities were often designated as objectives for major elements of the corps. Since the current trend in the world is toward more and larger cities, it is logical to expect that cities will play an important role in future wars.

The historical examples cited in this study are taken from World War II campaigns in France, Germany, Russia, and the Philippine Islands. Documentation of U.S. Army operations was found to be excellent, but documentation of Soviet and German operations appeared to be less accurate, and less reliable. The U.S. Army doctrine contained in this paper is a consolidation of material contained in U.S. Army field manuals and U.S. Army service school instructional material.

During World War II, the corps had sufficient forces to seize most cities, but the ground attack on a major population center with a hostile population required an army or army group. Corps headquarters planned and conducted eleven of the fourteen attacks described in the historical examples. Army or army group headquarters planned and directed the attacks on Stalingrad, Vitebsk, and Berlin. The examples are divided into four categories: unfortified cities during mobile warfare, fortified cities during mobile warfare, cities as part of a fortified line, and the megalopolis or supercity.

Unfortified Cities During Mobile Warfare

The battles of Le Mans, Koblenz, Yukhnov, and Bobruisk are included in this category. Each of these cities fell within two or three days. Each plan of attack included an isolating force, and the attacker usually had a minimum of three to one superiority of combat units.

Fortified Cities During Mobile Warfare

The battles of Metz, Kharkov, and Vitebsk are in this category. The defensive areas of Metz and Vitebsk were used as anchor points during German

efforts to stabilize their defensive lines in 1944. Both defenses successfully withstood the initial attempts to take them, and both cities fell relatively quickly after coordinated attacks reduced the surrounding fortifications and isolated the garrisons. Kharkov is an example in which the defending garrison was turned out of its positions by the threat of an isolating attack.

Cities as Part of a Fortified Line

The battles of Cherbourg, Brest, and Aachen are cited. The port facilities of Cherbourg and Brest were essential to the Allied logistical planners. Both ports were protected by a defensive line which had to be penetrated before the port could be seized. The Siegfried Line defenses had to be penetrated before Aachen could be isolated. In each of these attacks, the penetration of the defensive line was the most difficult and time consuming phase. The port cities fell within ten days of the date that the defensive line was penetrated, and Aachen fell shortly after it was effectively isolated.

The Megalopolis

The battles for the "supercities of Paris, Manila, Stalingrad, and Berlin are included in this chapter. After U.S. forces had crossed the Seine River both north and south of Paris and threatened to isolate the Paris garrison, French underground forces seized control of large sections of the city. The U.S. 5th Corps, with the 2d French Armored Division attached, arrived in time to assist in clearing the city. In the Pacific Theater, the U.S. 14th Corps required nearly a month to reduce the static defensive positions in Manila, which were manned by sixteen thousand hastily organized defenders. The Stalingrad and Berlin battles were conducted by army or army group headquarters, and are merely summarized in this study.

Doctrine

The lessons learned from the historical examples are examined in the light of current U.S. Army doctrine and instructional material from The Infantry School and the U.S. Army Command and General Staff College. Available Soviet and German doctrines are commented upon when they differ with U.S. doctrine. The conclusions are presented as a proposed doctrine which is a synthesis of lessons learned from the study. Separate paragraphs deal with the decision, the estimate, plans and preparations, and the conduct of the attack.

Conclusions

The doctrine which is proposed in this paper highlights the fact that fighting in cities should be avoided if at all possible. If a city is to be neutralized, nuclear, chemical, or biological weapons are the most economical means of accomplishing the mission. If a ground assault is required, the following should be considered:

Size of force required to seize a strongly defended city.

Necessity to isolate the city and defeat relief attacks.

Selection of key terrain and objectives within the city.

Influence of paramilitary forces and a hostile population.

Requirement for rapid collection and dissemination of intelligence and aerial photography.

In addition to the above, the conclusion is reached that the attack of a city should either turn the defending force out of its prepared position or isolate and destroy him. Destruction is accomplished by (1) isolating the defending force, (2) restricting its ability to move and react, and (3) penetrating its positions and isolating and destroying its strongpoints.

The corps normally has sufficient combat power to seize all but the largest cities with conventional weapons. The corps should place helicopters, combat engineer vehicles, and medium artillery in direct support of assault units or attached to them.

8. A DOCTRINE FOR DEFENSE OF A MAJOR URBAN POPULATION CENTER BY DIVISION AND LARGER UNITS, by Major Richard H. Sawyer, USA, 197 p.

The thesis from which this abstract is drawn develops a doctrine for defense of a major urban population center by division and larger units. The scope of the paper is limited to ground operations. The limited use of tactical special weapons and airborne and air assault techniques is considered briefly.

The thesis examines the battles for Aachen, Berlin, the Britanny Fortresses, and Stalingrad in considerable detail and the battles for Sevastopol, Smolensk, Strasbourg, and Vienna less intensively. From conclusions drawn, elements of common doctrine in the fields of personnel, logistics, civil affairs, intelligence, and plans and operations are generated. Three competing schemes of maneuver are also developed. These are tested and one selected as optimum. A final, consolidated doctrine is enunciated. Circumstances under which modification of the final doctrine might be beneficial are described and appropriate changes are proposed.

The battles which were studied revealed that the defense of a major urban population center may be undertaken for political or military reasons, or a combination of the two. Berlin was defended wholly as a matter of national prestige. The Brittany Fortresses were held to deny access to port facilities and to provide bases for the defender's submarine fleet. Aachen exemplified the influence of combined causes. It was militarily significant as a bar to the industrial Ruhr district of Germany. It had political importance as the first German city to experience a ground threat. Stalingrad was retained as a base for future operations. It also served as a means by which the Soviets occupied strong German forces which would have been more destructive elsewhere.

The obstacle value of cities was illustrated by the protracted defenses of Berlin, the Brittany Fortress of Brest, Stalingrad and Vienna. The Soviet success at Stalingrad was shown to have been in large measure due to the natural fortifications provided by the rubble of a partially destroyed community.

When cities with assailable flanks were strongly defended, the attacker frequently chose envelopment as the principal offensive tactic. Aachen, Berlin, and Vienna were outflanked prior to conquest. The inability of the Germans to accomplish the same thing at Stalingrad was shown as contributory to their ultimate failure there.

Elaborate fixed fortifications were used by the defenders of Aachen, the Brittany Fortresses, and Sevastopol. Expensive to construct, these works were shown to have been of questionable value when compared with simpler field construction.

The need for simple organization and adequate defense planning was illustrated by events at Aachen, Berlin, Brittany, Strasbourg, and Vienna. Berlin, defended without benefit of a formal defense plan, experienced great confusion due in part to a lack of centralized operational command. Aachen, Brittany, and Strasbourg were defended by forces handicapped by inefficient preparatory efforts; complex command structures retarded achievement of maximum readiness. At Vienna, acceptable control of the operation was maintained despite an awkward command arrangement.

The relative effectiveness of trained, regular troops and paramilitary units was represented by their performance at Aachen, Berlin, Brittany, Stalingrad, and Vienna. Regular soldiers performed creditably in all cases. Paramilitary elements or second line troops acted acceptably at Aachen and Brittany but poorly at Berlin and Vienna. Stalingrad showed the worth of soldiers specially trained for city fighting. The principal disadvantage of the use of other than regular troops was the unpredictability of their behavior.

At Aachen, Stalingrad, and Vienna the defender's ability to move combat power to meet enemy threats played an important part in whatever success was achieved. The city's restriction of movement by the attacker was also found to be significant.

Sustained logistic support was determined to be a key factor in a successful defense. At Stalingrad, the Soviets were able to maintain a flow of supplies by making use of a variety of means of transport. The city was held until relief. At Sevastopol, the attacker was able to cut the interior supply lines of a heavily protected and garrisoned fortress by use of aerial and artillery interdiction. The fall of the bastion was speeded by shortages of ammunition and rations which resulted from that action. The defense of Aachen was similarly curtailed by an encirclement of the city.

The problem of treatment of the civilian population was illustrated by the battles of Aachen, Berlin, Stalingrad, and Smolensk. Marshalling of the civilian resource for assistance in defense preparations was poorly done at Aachen and Berlin but more effective at Stalingrad. Interference with military activities occurred at Aachen and Smolensk. No standard technique for the control of the population was found. Civilians at Strasbourg were forced to remain in place while those at Aachen were directed to evacuate. Voluntary evacuation was permitted at other centers.

The fallacy of a defense concept based upon an isolated force was intimated by the results of the battles for the Brittany Fortresses and Sevastopol. Troops lost to the defender, through containment or ultimate capture, were shown to outnumber comparable losses to the attacker.

From the factors presented above and from other, more detailed considerations illustrated by the battles, the thesis develops common elements of doctrine. Essential portions of personnel doctrine concern the nature of forces involved and measures which can be taken to improve unit proficiency and maintain morale. The use of well trained, regular troops for active operations is held to be essential. Paramilitary forces and civilians may be employed for non-critical defense tasks and for construction and service tasks, respectively. Unit proficiency can be improved by the assignment of cadremen experienced in city combat and by the use of indigenous personnel as guides and interpreters. Key factors in the maintenance of morale are attainment of small unit and individual competence, the provision of creature comforts, and the frequent appearance of higher echelon commanders.

Salient points of logistics doctrine deal with the importance of adequate supply and coordinated construction efforts. Limited stockpiling, first of food and medical supplies, then of barrier materials, and lastly of fuel and ammunition, is designated as the preferred method by which to attain satisfactory provisioning. The development of emergency systems for input of bulk commodities is also called for. Continuous flow of general supplies must be maintained despite enemy interdiction. The use of multiple modes and routes of transportation and operations under conditions of reduced visibility are mandatory. Consideration should be given to the use of requisitioned civilian transport. Construction, performed to the maximum extent by civilian labor, must support the defensive scheme of maneuver. Emphasis is placed upon erection of field fortifications positioned to channel enemy attacks into routes most favorable to the defender.

Most effective use of the civilian population and phased evacuation comprise the major portions of civil affairs doctrine. The importance of cooperation among all agencies involved in the administration is also stressed. The doctrine conceives of early displacement of women, children, and others incapable of assisting in the defense activity. Within the provisions of the laws of land warfare, able bodied males are employed in construction or other defense efforts. They are evacuated when preparations are completed. Small numbers of civilians are permitted to remain in the center to participate in support activities during the active defense.

Intelligence doctrine is directed at the early and continuing collection of very detailed information concerning the center and its surroundings. Sources of such data are indicated as maps of all kinds, public and private documents, and the knowledge of local inhabitants. The need for active combat troop participation in the acquisition of information is emphasized, as is the requirement for the rapid dissemination of processed material. The importance of counterintelligence in the defense of hostile centers is stressed.

The thesis notes that since centers are defended for military or political reasons, or both, the decision to defend may be made at the national level. The military must appraise the effects of a projected defense upon broader operations and must elicit early decisions from higher authority.

The paper proposes, as an element of doctrine, that a common higher headquarters coordinate and supervise the activities of commands responsible for planning and execution of the defense and commands responsible for defense preparations.

The study examines the effects of the reasons for the defense, strength of available forces, terrain, and the enemy threat. Any of the factors may influence the location and nature of the defense. The defender may influence the enemy threat by choice of maneuver. The center is shown as contributing to the combat power of the defender. Optimum use of that combat power enables the defender to provide maximum security for the center. Combat power may be transferred from the center by acceptance of a reduced assurance of impenetrability there. The greatest effect of total combat power is gained when the center is used both for economy of force and as a restriction to enemy maneuver on its flanks.

The thesis proposes, as an element of doctrine, that initial major contact with the attacker be made well forward by strong forces which may accept decisive engagement if the situation warrants.

Three differing main schemes of maneuver are developed by the thesis. The first, the fortress concept, requires the use of permanent fortifications and garrisons, supplemented by external defense forces which fall back upon the center without significant delay and accept siege. In the second scheme, called the modified fortress concept, field fortifications ultimately retain a part of a larger defense force which, when forced back upon the center, ultimately withdraws and allows the remaining elements to accept siege. The third course is a free defense in which a larger defense force integrates the center into the defense of its zone, attempts to hold the center by strong, mobile protection of both center and flanks, and withdraws rather than accept isolation of elements in the center.

A simple test of the schemes of maneuver shows that friendly use of isolated forces permits the enemy to increase force superiority away from the center and that the free defense is the most desirable of the schemes tested. Reasons for the latter conclusion are the free defense's ability to hold relative force at a constant level, its safety, and its most effective use of added combat power provided by the center.

An analysis is made of the effects of special circumstances upon the selection of the optimum scheme of maneuver. The investigation reveals that ordinary terrain may aid the free defense but that geographic isolation of a center may force the use of a fortress defense. If retention of the center is mandatory, the use of the smallest force consistent with the mission is favored. An enemy decision to attack, rather than contain, an isolated force supports the use of small stay-behind elements. The use of either the fortress or free defense is shown to be acceptable when tactical special weapons are employed. Limited enemy use of airborne or air assault attack favors the fortress concept and requires special vigilance when the free or modified fortress defenses are considered.

From the evaluation and testing the final doctrine is derived. Elements of common doctrine, described above, are included. The portion of the doctrine dealing with the main operational scheme of maneuver is quoted here in its entirety:

"The defense of the center will be integrated with other defense operations in the zone in which the center is located. The presence of the center will exert no disproportionate influence on the nature of the defense of the zone. Area or mobile defense may be selected as appropriate.

"The built-up area of the center provides a valuable obstacle for use by the defending forces. It serves to increase available combat power by permitting relatively small forces to hold a sizable portion of the zonal defense position. Forces not required for the defense of the center proper are used to increase defensive strength elsewhere. The existence of the center by itself does not dictate the use of a static defense of the terrain surrounding it. The defense there may make best use of its combat power by utilizing its mobility to the maximum and by degrading that of the enemy by channeling his attacks toward the obstacle formed by the center.

"The defense is conducted in a manner which makes possible the maximum application of friendly combat power. Major effort is devoted to the guidance of attacks into unfavorable or restrictive terrain in which counterattacks will be most effective.

"The defense will be initiated by strong forces positioned on good defensive terrain well forward of the center. Rivers, mountain or hill masses, swamps, or manmade obstacles may be used to strengthen the forward positions. Special erection of barrier systems and field fortifications may be undertaken provided such efforts do not detract from construction in support of the main defense system. Forward forces prevent surprise of the main defense, cause the enemy to lose momentum and to deploy, and provide information concerning the attacker's most probable course of action. Forward forces may accept decisive engagement if the probability exists that enemy combat power may be reduced significantly.

"If withdrawal of the forward forces is made necessary, new, prepared positions are occupied. These include locations within the center and strongpoints in the terrain on the flanks of the center.

"All available defense forces are used to halt further advances. Combat power is so distributed that maximum advantage is taken of the obstacle value of the center. If terrain features exist which tend to partition the defense, combat power will be distributed to assure capability of semi-independent action by forces within the partitions.

"Maximum mobility of the total defense is gained by limiting forces within the center to those necessary to deny rapid movement to the attacker. If a protracted defense is anticipated, vehicles and equipment surplus to the needs of the forces in the center may be reallocated to those outside the center, thus further improving the mobility of the entire defense. Under similar circumstances, artillery, usually attached or organic to elements in the center, may be reduced in strength to provide more firepower to units conducting mobile portions of the defense. Adequate anti-tank and engineer capability must be allowed to remain with the forces in the center. Tactical deception may be employed to create the impression of greater strength in the center.

"Encirclement constitutes the greatest threat to strongly defended centers. Encirclements are defeated by the use of powerful mobile forces whose counterattacks are directed against the flanks of the initiating penetrations. The center restricts maneuver of attacking forces seeking to penetrate at or near its flanks. The defense will stress the use of the center as a fixing element against which the attacker will be driven by the counterattack force. Barriers and fortifications outside the center will be arranged to assist this maneuver. Voids in the barrier system will be provided through which enemy attacks will be channeled.

"Counterattacks may be mounted by local or higher echelon reserves. Reserves will be positioned so as to facilitate major counterattacks against flank penetrations, provision of light forces for use on the flanks of the center in support of the counterattacks, and, exceptionally, provision of reinforcements for elements in the center.

"Throughout the conduct of the defense, contact will be maintained between elements actively engaged in the operations at or near the center and those in other portions of the defense zone. All forces will remain specially vigilant against airborne or air assault attacks aimed at severing contact or impeding the movements of reserves.

"If the attacker forces withdrawal of flank or center forces or achieves significant penetrations which cannot be eliminated, the positions of elements are adjusted to assure that contact is maintained. Forces in the center may delay through it if this is necessary to preserve contact with flank elements. All possible measures are taken to resist encirclement of the center or its defense force.

"If the attacker achieves deep penetrations or envelopments which cannot be contained and which seriously threaten the defense force in the center, that force will withdraw. Denial operations and demolitions will be performed in consonance with existing guidance. Measures to recapture the center or to continue the defense to its rear will be taken as appropriate."

Geographic isolation and mandatory retention are treated by the thesis as special cases. The conclusions reached during analysis of special situations are applied to modify the basic doctrine. Specific changes, for use in these extraordinary circumstances, are proposed.

9. THE COLLECTION AND PROCESSING OF COMBAT INTELLIGENCE AS PERFORMED BY THE U.S. ARMY DURING OPERATIONS IN NORTHERN EUROPE, by Major Jared B. Schopper, USA, 195 p.

Scope.--This abstract summarizes an analysis of the functions of collecting and processing information into combat intelligence as performed by the U.S. Army in northern Europe during World War II. The time frame is January 1944 to May 1945. Particular emphasis is laid on the direction and results of the information collection effort in First, Third, and Ninth U.S. Armies. A case study of the information known and interpreted before the German Ardennes counteroffensive on 16 December is made; division level intelligence operations in First Army are considered in detail along with V and VIII Corps after action comments.

The study considers functions and problems of intelligence rather than the inter-relationships of events and persons. It is not a comparative study of the armies' intelligence operations, but rather an examination of the strengths and weaknesses of those operations.

Sources.--After action reports of the field armies considered comprise the bulk of source material for the study. Intelligence annexes, estimates, and periodic reports actually used during the period are quoted to substantiate the analysis. Corps and division reports are used to amplify field army records. Published works are occasionally quoted if the writers were first-hand witnesses of a specific combat example or sequence of events.

Chapter Summary.--Chapter I contains the definitions of information, combat intelligence, essential elements of information (EEI), and processing applicable to the period under study.

Chapter II deals with the direction of the collection effort. Charts showing the collection agencies available to the field army G2 and the placement of intelligence specialist teams at army, corps, and division are included. The use of EEI and standing operating procedure to direct the collection effort are discussed. The [illegible]lan or collection worksheet is shown to have been seldom used in combat.

Considerable attention in Chapter II is devoted to the effort in First and Third Armies to set up effective aerial reconnaissance request channels. The problems of achieving coordination with supporting tactical air commands in England and on the Continent and the establishment of the field army photographic interpretation center are described. First Army's plans for gaining basic photographic cover of the Cotentin Peninsula and visual reconnaissance of German reinforcement routes into Normandy are considered along with the necessity for ground liaison officers and multiple means of communication between airfields and the army photo center and tactical command posts. Third Army's recommendation of aerial reconnaissance coverage for field army to a

depth of 150 miles beyond the line of contact is discussed. First Army's requirements for maps for the initial phases of Operation OVERLORD and the procurement of weather information are outlined.

Chapter III deals with the results of the collection effort. Information agencies and sources are discussed, and an estimate of their relative value is reached. Among the agencies and sources discussed are: (1) the interrogation of prisoners and civilians; (2) Office of Strategic Services Secret Intelligence Teams attached to field army; (3) radio intercept; (4) documents; (5) aerial reconnaissance. The value of prisoners in producing order of battle information is stressed. The limitations of civilian interrogation and document examination are shown. Brief examples of the usefulness of radio intercept are given. Aerial reconnaissance is discussed under the headings of tactical (visual) reconnaissance and photographic reconnaissance. Several examples of the use of tactical reconnaissance in First and Third Armies are given; the difficulties of Ninth Army in achieving effective aerial photographic support are traced. Chiefly, Ninth Army was hindered by bad weather, initially cumbersome channels of request, and late distribution of prints. The Army L5 plane's use as a partial solution to these problems is developed.

Chapter IV considers the collection and interpretation of information within First, Third, and Ninth Armies before the German Ardennes counteroffensive. First Army's VIII Corps is surveyed by division to determine enemy division identifications, indications of the impending German offensive, and what interpretations or further efforts at collection were made. An examination of available records of VIII Corps, 9th Armored Division, and 28th Infantry Division shows extractions from the files which prevents a full critique of division intelligence operations. Nevertheless, it is shown by direct examination of intelligence estimates and G2 journals that VIII Corps divisions did not direct a vigorous collection effort to determine the divisions opposing them. Estimates were often held for days and weeks without fresh apprisals of the enemy situation and capabilities. There was little evidence of renewed ground reconnaissance effort after several indications that extensive relief or reinforcement operations were occurring at night in the Eifel Forest. Estimates at division and corps level in VIII Corps reflected the wishful thinking, established by after action interviews, that the German did not have the will, material resources, or favorable terrain to conduct an attack through the Ardennes. In few instances did the armies ascribe the capability of conducting a major offensive operation to the German. The recognition of the Fifth and Sixth Panzer Armies as being west of the Rhine was universal, but this mobile reserve was given the capability of conducting limited offensive action in spoiling attacks or counterattacks on Allied forces achieving a crossing of the Roer River. German doctrine for employment of the Siegfried Line is considered to show that the Ardennes counteroffensive was in accord with that doctrine, then in print as an Army manual available for study by G2's.

Conclusions.--The concluding chapter of the study points out the importance of weather as an element of combat intelligence in World War II. The influence of weather was not only critical in tactical operations but intelligence operations as well. The need for an all-weather aerial surveillance capability was clearly developed during our experience in northern Europe in World War II. Despite the hindrances of weather, however, the G2 had excellent sources of information which could only be exploited by a strong, well-planned collection effort. Continual estimates to keep the commander informed and to point out deficiencies in the collection effort are vital in successful intelligence operations. Standing operating procedures alone were insufficient for the collection of information.

10. THE UNITED STATES INFANTRY DIVISION AND THE AUSTRALIAN PENTROPIC DIVISION--SIMILARITIES AND DIFFERENCES, by Major Henry R. Shelton, USA, 132 p.

This comparative analysis of the United States Army Infantry Division and the Australian Army PENTROPIC Division is based on the possibility of these units being deployed as part of a combined force to implement the provisions of the ANZUS treaty. Components of such a combined force would face some unusual operational and environmental challenges. To minimize problems which might arise, it is essential that a mutual understanding of the similarities and the differences of the participating forces be achieved prior to formation of such a combined force. The significant similarities and differences are developed through a comparison and analysis of the organization, equipment, doctrine, procedure, and terminology used by each division. The U.S. infantry division used for comparison with the Australian PENTROPIC Division is the type depicted in U.S. Table of Organization and Equipment 7-E, dated 15 July 1963 (2 tank battalions, 8 infantry battalions).

A general comparison of all organic elements of the two divisions is accomplished in the beginning of the thesis. These comparisons are based on personnel strengths of units that perform comparable missions, and includes an explanation of the methods used to control organic elements of each division. This general comparison concludes with a discourse on the organization and operation of the division level staffs. The text in this part of the thesis is supplemented by tables which show a comparison of personnel strengths of major units in each division, and an outline of each division's staff organization.

Combat and combat support elements are compared in detail. Each type element (infantry, signal, etc.) is considered in relation to its mission, organization, equipment, firepower, communications, and transport. Each type element is compared in turn. Each type element is discussed in the following sequence. First the U.S. unit is discussed, followed by a discussion of a similar Australian unit, and concludes with a comparison and analysis of the differences that exist between the two units. Included are tables depicting the organizational structure, personnel strengths, and major items of equipment belonging to each type of combat and combat support unit organic to each division.

Differences in division level logistical terminology, procedures, and organizations are discussed by examining each division's logistical procedure against the background of the similar logistical functions. The discussion starts with a consideration of U.S. procedures followed by a consideration of the Australian procedures and ends with a comparison and analysis of logistical procedures in both divisions. In addition to the difference in organization of combat service support units, a significant difference in logistical terminology is revealed in this part of the thesis. The need for an understanding of these differences in logistical terminology is suggested as a prerequisite for effective logistical planning required to support a combined United States-Australian force.

The discussion of operations doctrine reveals that similar principles, fundamentals, and basic concepts provide guidance for directing the tactical operations of each division. The major difference developed is in terminology used to describe similar tactical actions. This difference in terminology presents a significant problem which must be alleviated prior to operations in a combined force environment.

Significant similarities isolated in the comparison of the two divisions follow. First is the common basic language which simplifies the standardization of operational procedures, detailed coordination, and understanding of each other's problems. Second, the existence of similar tactical doctrine simplifies planning of combined operations. Third, the organic communications systems provide for establishing lateral radio communications between adjacent units at all levels of command from company to division.

Other similarities involve limited combat service support, and staff organization and procedures. The M2A2-105mm howitzer, the M-60 machine gun, the 81mm mortar, the 106mm recoilless rifle, the 3.5 inch rocket launcher, and their spare parts are standard items in both divisions. The U.S. supply system handles all types of ammunition required for the weapons in the Australian infantry battalion and division artillery. The staffs' organizations used within each division is different; however, the collective function performed by each staff are similar. (An exception to this similarity is the staff responsibilities for logistics at the division level.)

Significant differences between the U.S. division and the Australian division are divided into two categories. First, those differences in terminology, procedures, and methods used to control major maneuver elements. Second, those differences in organization that affect each division's capability to move and shoot.

The significant differences in terminology, procedures, and methods used to control major maneuver elements are problems that can be solved by combined planning and mutual understanding. Each of these differences must be considered before an operation involving a combined force of United States-Australian divisions can be adequately planned. The paramount requirement prior to operations in a combined force environment is the establishment of standard terms for use by all components of the combined force.

The U.S. infantry division and the Australian division were organized for different purposes. Consequently, there is a significant difference in the overall combat power and mobility of these two divisions. These differences are also affected by the characteristics of the areas of operations in which they are employed. Therefore, a commander of a combined force of U.S. and Australian divisions must consider these differences in arriving at a decision as to how each division can best be employed.

The key to the successful formation of a combined force consisting of an Australian Army PENTROPIC division and a U.S. Army infantry division is recognizing that there are both significant differences and significant similarities between the two divisions. The combined force commander that recognizes these similarities and differences should have no insurmountable problems in organizing an effective United States-Australian combined force.

11. DIVISION NIGHT ATTACK DOCTRINE, by Major Corman C. Smith, USA, 151 p.

The requirement for review of current division night attack doctrine is found in the apparent inconsistencies, ambiguities, and omissions of current doctrine. Present division night attack doctrine is alleged to fall short of a coherent, organized framework for treating all the relevant effects of night on relative combat power.

The fundamental characteristic of night--reduced visibility--is examined to trace its origin, nature, and impact on military environment. It is shown that darkness clearly reduces the absolute combat power of any military force by making any job harder to do than that same job is in daylight. The relevant effect on military operations is the influence of darkness on the relative combat power of two opposing military forces.

All possible forms of combat power are classified into four major types by using the factors of friendly and enemy fire and movement. Thus, type I conflict is friendly movement vs. enemy fire; type II is friendly movement vs. enemy movement; type III is friendly fire vs. enemy fire; and type IV is friendly fire vs. enemy movement. Combat power is the ability to engage in any of these forms of conflict. All activities which generate combat power do so only insofar as they enhance the ability of the force to engage in one or more of these four types of conflict.

Treating each type of conflict separately, there are three possible effects night can have on an attacker's relative combat power: increase, leave unchanged, or decrease. That is, the attacker may be better, just as well, or less able to attack at night as he was during daylight. Depending on the particular combat power relationship which exists in daylight, there are 13 possible cases for the net effect of night on relative combat power in any single form of conflict. Since there are four forms of conflict, there are in all 52 possible effects which night can have on the relative combat power of an attacker. These 52 cases are included in a comprehensive analysis which, though it cannot insure good decisions, can insure that the commander's attention is focused on all the relevant considerations when trying to estimate the influence of night on the division's ability to attack. Night's

action as a powerful equalizer when two forces with unequal daylight combat power oppose each other is predicted because night makes any superiority of combat power much harder to apply effectively.

Use of the analysis is illustrated by two brief examples. The analysis is then tested against recorded military experience with both successful and unsuccessful night attacks. This experience confirms the analysis, pointing up vividly the role of darkness as favoring the force which has the least daylight combat power.

Three developments since World War II and Korea, to include the introduction of nuclear weapons into the division's arsenal, are considered. The division's night attack capability is found to be quite insensitive to reorganizations above the company level. It is predicted that nuclear weapons will be extremely difficult to employ to advantage in the night attack because of problems of dazzle. New mechanical mobility and electronic surveillance means should materially enhance the division's absolute night attack capability over that of the World War II division.

Specific doctrinal implications are drawn. Principally, these are that doctrine should provide a systematic framework for use by commanders in considering the influence of darkness on relative combat power. This framework can help the commander focus his attention on all the relevant considerations. Thus, when he has a choice the commander is better able to decide whether or not attacking at night is to his advantage. When he is required to attack at night the commander is assured that he considers the possible opportunities which might be exploited and the possible pitfalls which require special attention. With such a doctrine, the best use of available divisional resources is more likely than with the current night attack doctrine.

12. THE EVOLUTION OF DIVISION LEVEL NON-NUCLEAR FIRE SUPPORT COORDINATION OF ORGANIC, ATTACHED, AND SUPPORTING GROUND WEAPONS AND SUPPORTING AIRCRAFT IN THE UNITED STATES INFANTRY DIVISION FROM 1942 TO 1945, by Major Alfred T. Tudor, USA, 108 p.

The purpose of the thesis is to trace the evolution of fire support coordination and control at the United States infantry division level through World War II (1942 to 1945). The coverage is restricted to the coordination and control of organic, attached, and supporting ground weapons and supporting aircraft. Troop safety measures are examined briefly in their relationship to fire support control and coordination. The study is based primarily upon United States infantry division after-action reports and observer reports during periods of active combat from 1942 to 1945.

At the outbreak of World War II the War Department doctrine with respect to fire support coordination and control was clear and workable in some areas and completely lacking in others. Such doctrine as did exist had not been tested in combat. The duties and responsibilities of the division general and special staff in control and coordination of fire support were prescribed in the 19 August 1940 edition of War Department FM 101-5: Staff Officers' Field Manual: The Staff and Combat Orders. The duties and responsibilities of the division artillery commander, who was also the artillery officer on the division special staff, were prescribed in the 10 July 1940 edition of War Department FM 6-20: Field Artillery Field Manual: Tactics and Technique.

Doctrine for the coordination of artillery fires was fairly complete in 1942. Responsibility for control and coordination of organic, attached, and reinforcing artillery was assigned to the division artillery commander. However, no specific responsibility for insuring the coordination of artillery support with the scheme of maneuver was assigned to either the division artillery commander or the division G-3. In general the doctrinal concept of artillery employment was one of centralized control at division artillery headquarters. Provisions were made for the attachment of artillery units to subordinate elements of the division. However, such attachments were considered exceptions to the normal centralized employment of artillery. The use of artillery liaison officers to supported units and to reinforced artillery units was doctrinal. The exchange of liaison officers among adjacent division artilleries was not considered. The use of artillery groupments to facilitate control and coordination of artillery fires and fire plans existed in concept but lacked specific doctrinal coverage.

The use of air support in ground operations was described in the most general terms in War Department Training Circular 52: Employment of Aviation in Close Support of Ground Troops, dated 29 August 1941. That circular did describe an "Advanced Air Support Command Post," to be set up near the command post of the supported ground unit. Its purpose was to coordinate air operations with the operations of the ground unit. There was a pronounced lack of doctrine in 1942 in the area of the coordination of artillery with air support.

The Allied invasion of Northwest Africa was made in November 1942, subjecting the doctrine for division level coordination of fire support to its first combat test. Except for the retention of centralized control of artillery by the division artillery headquarters when the need for some attachments to regiments was evident, artillery doctrine proved sound. The employment of air support aircraft, however, needed considerable improvement. The divisions had air support officers attached, but they had little control over the employment of air support. The air support officers acted essentially as advisors to the division commanders. They were forbidden to communicate directly with the support aircraft. Air support missions had to be requested hours, even days, in advance, and the division commander had little flexibility in his use of air support. The bomb line was employed as a troop safety measure in Northwest Africa and apparently was adequate.

During the following year the North African campaign was terminated, Sicily was invaded, landings were made at Salerno, and division-size operations began in the Pacific theater. In general, centralized control of artillery fires was retained by division artillery headquarters in the Mediterranean area. More decentralized operations were normal in the Pacific area. Several divisions began to coordinate the fires of larger caliber nonartillery weapons of the division with the fires of the artillery. A few divisions installed direct telephone lines between the division G-3 and the division artillery S-3, to improve coordination of artillery support with the scheme of maneuver. Artillery was employed in both theaters to mark targets for air strikes with colored smoke. However, that was the extent of air-artillery coordination in 1943. More simplified procedures for requesting air support missions were instituted in the Mediterranean area. The procedures in use in the Pacific area were slow. Division air support officers

began communicating directly with the pilots of support aircraft in both theaters in late 1943. However, the primary use to which those communications were put was to coordinate the artillery marking rounds for target identification. The air support officers did not control air strikes. Day and night bomb lines and panels to mark friendly front lines were employed as troop safety measures in the Mediterranean area. Neither measure was effective in the jungles of the Pacific theater.

The year of change for fire support procedures was 1944. The campaign in Italy was brought to an end, the large-scale invasion of Northern France was launched, and the tempo of action in the Pacific was increased. In Italy and in Northern France the coordination of artillery fires was continuously improved by the more extensive use of artillery liaison officers and subordinate and reinforcing artillery headquarters. Nearly all division artilleries integrated the fires of larger caliber non-artillery weapons of the division into the artillery fire plans. A few division artilleries made some effort to coordinate artillery fires with air attacks, to achieve a greater effect on the target. Air request procedures were further simplified, and, late in the year, some divisions and corps were allocated air support missions in advance of their need. In addition, armed reconnaissance flights were allocated to ground units, giving those units an "on call" air strike capability for the first time. However, only one air support officer was attached to each infantry division in Europe as a rule. Air support in the Pacific area improved also, but not so much as in Europe. Some simplification of air request procedures was accomplished in the Pacific. Air support officers or controllers were attached to regiments and, in some cases, to battalions. Techniques employed in the Pacific area permitted the divisions to employ air strikes on targets of opportunity. Several divisions in Europe encountered serious troop safety problems in their employment of close air support. However, troop safety did not appear to be a major problem in the Pacific area.

Very few new techniques in fire support coordination evolved during 1945. The use of the more effective techniques of 1944 spread to other divisions. Problems of coordination and troop safety increased appreciably toward the end of the war in Europe. However, those problems were solved by using the techniques of 1944 more extensively.

By the end of World War II the trend toward coordination of air support and the fires of larger caliber non-artillery weapons of the division with the fires of artillery units was becoming evident. The overall trend in the division was for the integration and coordination of all fire support available to the division to be performed at the division artillery headquarters.

13. NORTHERN OFFENSIVE OPERATIONS, by Major William G. Cash, USA, 161 p.

The peculiarities of northern offensive operations during the winter season are the subject of discussion of this thesis. The purpose of this paper is to provide the reader with an understanding of the dynamic effects of environmental factors of the northern areas on offensive military operations and to point out the methods used to overcome, or to reduce the significance of, these effects. A thorough understanding of how and to what extent the environment affects operations is a prerequisite for the effective and

efficient employment of military forces in a northern region.

The first chapter is devoted to an examination of the physical factors of that part of the earth's surface that lies north of the Temperate Zone, or in more technical terms, the area north of the 50° isothermal line. Mountainous areas which lie within this line are omitted in that these areas require special considerations which are worthy of separate study. The topography, winter climate, vegetation, and cultural features of Canada, Alaska, Finland, and Eurasia are the principal areas of interest and research since the terrain in these land areas offers the best possibilities for the conduct of warfare.

Chapter II is a discussion of those aspects of a cold environment which may affect the will of the soldier to fight or his capability to perform his job in an efficient manner. The first aspect considered is the physiological effects of the northern environment on personnel. This subject area includes the difficulty of the human body in acclimatizing to the hostile climate of arctic areas and the requirment for protective clothing and equipment to safeguard against the hazards of cold injury. Although this protective clothing proves most effective in protecting the body, the hampering action of these bulky garments serves to reduce individual efficiency. The efficiency of the individual is further reduced as the wind chill factor increases. The remaining portion of this chapter is devoted to an analysis of the mechanical aspects of frostbite and the psychological effects of cold weather environment. The psychological effects of the cold environment on personnel are less defined than are the physiological effects and, consequently, are more controversial.

The minimum training requirements for an infantry division to successfully conduct operations in an arctic environment are the subject of chapter III. A master training program is submitted for consideration. This program includes the indoctrination training that should be conducted at the division's home station, as well as the training requirements that must be completed after the division arrives at an arctic training site. Included in the discussion are individual, unit, and specialist training requirements. It is emphasized that the program outlined is the minimum training required, with additional training, when possible, being desired.

Combat service support during the conduct of winter offensive operations in a northern environment is discussed in chapter IV. The problems of logistical support are complicated by the difficulty of cross-country movement, the widely separated and poor communications facilities, and the increase in logistical loads due to the special equipment needed by the infantry division in northern areas. Wheeled vehicles have been determined to be valueless for cross-country operations; therefore, tracked vehicles should be substituted when operating in the forward combat areas. Frequent task force operations will require the fragmentation of the support command.

The tactical considerations for operations in northern areas during winter months are the last subject for discussion. The winter season, with its frozen lakes, streams, and muskeg swamps, presents the best period for the conduct of offensive operations. These frozen waterways often provide excellent avenues of approach and routes of communication because of their flat and smooth surfaces. The numerous lakes which dot the landscape of northern

areas constitute ready-made landing areas for cargo aircraft and heliborne operations. One of the greatest limiting factors for infantry operations in the northern area is the difficulty of cross-country movement and the slowness of troop reaction time in accomplishing assigned tasks. Factors causing this delayed reaction time are discussed along with the importance of accurate and current meteorological data in decision making. The few communications facilities that do exist in the northern areas assume greater tactical significance than would be the case in a Temperate Zone environment. These rail and road facilities will often be designated as objectives for the infantry division. The widely separated nature of these facilities will frequently require the organization of independent task forces. The conclusion is reached that the considerations for the organization of a task force in the North are no different from the considerations in the Temperate Zone. The techniques used by a task force in the North to seize assigned objectives will be different from Temperate Zone operations, but the tactical principles for the conduct of the attack will remain the same.

The basic conclusions reached as a result of this research are as follows:

1. The hostile environment of the Arctic is a dynamic and unrelenting force that will challenge the imagination, ingenuity, and physical resources of even the best trained military units that may be committed in this area of the world.

2. The winter season is the most favorable season for the conduct of military operations in the northern areas. Within the winter season, the period January to March offers the best possibilities for military operations because of improved trafficability of terrain.

3. The human body does not possess the physical capability to acclimate to extreme cold temperatures as it does to extreme hot environments.

4. The large amount of cumbersome clothing required for protection in the Arctic results in a loss of efficiency of the individual soldier because of a decrease in manual dexterity.

5. Military operations in the Arctic require the ultimate in physical conditioning of the participating troops.

6. A minimum of nine weeks of intensive preparatory training is required to ready an infantry division in the Temperate Zone for deployment to a combat theater in the northern areas.

7. The wheeled vehicle does not possess a satisfactory cross-country capability in the snow-covered terrain of the Arctic.

8. The widely separated and poor communications systems, the difficulty of cross-country movement, and the increase in amounts and types of supplies required in northern areas tend to intensify and complicate logistical problems associated with arctic operations.

9. When practical, unit distribution of supplies will be preferred over supply point distribution during operations in the North.

10. Offensive military operations in northern warfare will not have extended, solid frontlines, but instead will consist of independent task forces of battalion, brigade, and, in some instances, division size.

11. The considerations for tailoring of independent task forces for northern operations will be no different from those considerations for operations in the Temperate Zone.

12. Current and accurate meteorological data are essential for successful operations in northern regions. Temperature, wind, and precipitation will influence the commander's decision and concept of operations.

13. The ROAD infantry division, as currently equipped for operations in a temperate environment, does not have the capability of conducting offensive operations in northern regions during the winter season. Equipment lists must be modified to reflect substitution of tracked vehicles for wheeled vehicles which are expected to operate in the forward combat areas where few roads exist. Additional changes in the equipment lists are necessary to provide the division with the special items of cold weather equipment to cope with the severe and hostile environment of northern regions.

14. DOCTRINE FOR IMPROVING MANAGEMENT OF COMMUNICATIONS-ELECTRONICS STAFF FUNCTIONS WITHIN THE ROAD DIVISION, by Major Robert B. Craig, USA, 122 p.

The objective of this thesis is to develop methods for improving management of division communications-electronics staff functions through research and analysis. For personnel working in this field, the term communications-electronics has had a significant impact on division operations. Introduction of the term into the Army's vocabulary created an air of uncertainty as to its composition, involvement, and responsibilities. The use of the term within the higher staffs of the Army as a title for separate staff sections of joint and combined staffs and subsequently as an element of the army, corps, and division tactical operations centers required definition in relation to the organization being discussed.

The specific purpose of this thesis is to clarify responsibilities, to determine composition, and to define procedures and functions toward the goal of improving management of communications-electronics staff functions within the ROAD division.

Sources for this research were U.S. Department of the Army field manuals, training manuals, regulations, pamphlets, and tables of organization and equipment. Other items used as research material included current U.S. military books, publications on Russian tactics and doctrine, U.S. Army Command and General Staff College studies and texts, and certain U.S. military organization and functions manuals. In addition to the above, letters and

questionnaires were sent to selected personnel in the field; comments, ideas, and criticisms received provided a major input to this work.

Chapter I presents a brief background showing events leading to development of the term communications-electronics. The applicability of the term at division level is discussed. The broad doctrinal definition of the term communications-electronics is divided and reassembled to provide a useful definition for the remaining portion of the chapter, that of analysis of the present division general and special staff management responsibilities.

Chapter II presents a different concept for the management of division staff functions. This concept, proposed in a study at the U.S. Army Command and General Staff College, involves elimination of the division special staff and subsequent integration of the special staff functions into the general staff. The impact of this proposed structure on communications-electronics is discussed; the relative advantages and disadvantages to this concept, compared with the present system, are presented.

Chapter III presents another management concept. Here the proposed creation of a division assistant chief of Staff, G6, communications-electronics, is discussed. This conceptual staff organization is also compared with the present staff and advantages and disadvantages are provided.

Chapter IV provides field opinion of selected personnel in five areas. These areas are basic to the thesis and relate to use of the term communications-electronics at division level, adequacy of the present division signal special staff, and separation of staff and command responsibilities of the division signal officer. Comments were also requested on revising the present staff by either integration of the special into the general staff or by the creation of a division general staff section, G6.

Chapter V develops conclusions and presents recommendations. Based upon analysis of the present division staff, the current trends in the increased use of communications-electronics, the development of the use of more sophisticated equipment, and the necessity of increased attention to electronic warfare, it was concluded that the creation of a division assistant chief of staff, G6, communications-electronics, offers significant advantages over the present system. It is recommended that this subject be made a matter of additional study by the appropriate staff elements of the Department of the Army. A specific and detailed definition of the term communications-electronics is offered for inclusion in the dictionary of Army terms. Increased emphasis upon the staff planning and coordination for electronic warfare at division level is recommended. Realignment of the division distribution authority and transfer of its functions to the division support command are also recommended.

15. THE FIELD ARTILLERY GROUP IN SUPPORT OF THE CORPS AND FIELD ARMY, 1942 - 1953, by Major Russell A. Weathersby, USA, 33 p.

The purpose of this study is to describe and analyze the requirements which resulted in the organization of the field artillery group; its

employment in support of the corps and field army in World War II and the Korean Conflict; and the evolution of doctrine and organizational structure from 1942 to 1953.

The adoption of the triangular infantry division in 1940 eliminated the fixed field artillery brigade with its organic field artillery regiments as the division artillery. The new division artillery consisted of a headquarters and headquarters battery and four separate field artillery battalions. This new structure was more responsive in providing field artillery support to the maneuver units and complemented the combat team concept of the new division. By contrast, the nondivisional field artillery retained a fixed brigade organization. Organic to the nondivisional brigades were a headquarters and headquarters battery, an observation battalion, and three field artillery regiments. The battalions of the regiments were rigidly tied to the regimental headquarters by administrative and logistical strings. While it became readily apparent that the nondivisional field artillery organization lacked the flexibility and responsiveness of the divisional artillery organization, no formal action was taken to correct these deficiencies until 1942.

In 1942, Army Ground Forces, under the leadership of Lieutenant General Lesley J. McNair, reviewed the organizational structure of all nondivisional units. As a result of this review, it was recommended that a reduction be made in the number and size of headquarters within the nondivisional force structure of the Army. To replace the fixed organizations of corps and army it was advocated that nondivisional units be organized into self-contained battalions which could be allocated to an army and further attached to the corps as required by the situation. This tailoring concept followed General McNair's convictions that by eliminating unnecessary control headquarters greater flexibility and economy could be achieved.

This recommendation, insofar as nondivisional field artillery is concerned, was approved by the War Department in December 1942. The field artillery regiments were to be converted to separate battalions and the regimental organization abandoned entirely. To provide a control headquarters for the separate battalions, the field artillery group headquarters was organized. This headquarters, like the nondivisional field artillery battalions, was to be assigned to the army and attached to the corps to function under headquarters, corps artillery. Organized to control three or four battalions tactically, the field artillery group headquarters originally was provided only a limited capability for administrative functions.

While the new organizational structure was being implemented in 1943, the first field artillery group headquarters was committed in the North African campaign. Since it had been decided to delay the reorganization of the field artillery units already committed in combat, the arrival of the field artillery group headquarters in North Africa combined the new organization with the fixed field artillery brigade. The presence of the field artillery brigade resulted in the field artillery group headquarters and its attached separate battalions being used almost exclusively as a pool from which to draw additional field artillery to attach to the divisions and thereby weight the divisions' effort.

As the battle shifted to Sicily, the hybrid corps artillery organization continued and the use of the field artillery group changed very little. While the field artillery group performed well in North Africa and Sicily, its capabilities were not fully utilized nor tested.

The fixed field artillery brigade continued to serve as corps artillery during the early phases of the Italian campaign; however, all newly arriving nondivisional field artillery units were organized along the new concept. By March 1944, all regiments of the fixed field artillery brigade in Italy had been converted to field artillery group headquarters and separate battalions. The reorganization did not change the highly centralized employment of nondivisional field artillery, but it did provide a uniform corps artillery structure for the first time in Italy.

The soundness of the field artillery group was vividly portrayed in the ar of movement in Western Europe. Field artillery battalions were rapidly shifted from group to group, from corps to corps, and even from army to army in order to add weight to success or to strengthen a weakness. Likewise, the field artillery group headquarters, with or without attached battalions, was rapidly moved from one command to another. Many different techniques were utilized by the nondivisional field artillery commanders in providing the necessary support; however, all relied heavily on the flexibility of the field artillery group, both in tactics and organization, to meet these requirements.

In the Pacific theater limited use was made of nondivisional field artillery during the first two years of the war. As the size of the operations expanded and techniques of field artillery employment improved, the field artillery group was used extensively. The operations in the Philippines and on Okinawa, although more centralized and involving less rapid movement than those operations in Western Europe, provided ample opportunity for the field artillery group to function effectively.

Between World War II and the outbreak of the Korean War in 1950, the field artillery group organization remained under close study. Various proposals for changes in the structure of nondivisional field artillery were made; however, no major changes were adopted and the organization remained basically the same.

The entire Korean War was characterized by a lack of sufficient nondivisional field artillery units and only one field artillery group was employed. Even with the limited number of battalions, there still existed a definite need for the group headquarters to assist the corps artillery commander in controlling the units spread across the extremely wide front.

Few changes were made in the organizational structure of the field artillery group from 1942 to 1953. Likewise, doctrine with regard to its employment changed very little. The concepts on which the unit had been built were sound and presented to corps and army artillery commanders a tactical headquarters with a high degree of flexibility in organization and tactics. These commanders were limited only by their own skill in using the field artillery group to provide effective artillery support for the corps and field army.

16. THE EVOLUTION OF AVIATION ORGANIZATION WITHIN THE ARMY DIVISION AND AN APPRAISAL OF THE ROAD DIVISION ORGANIZATION, by Major P. C. Gast, USAF, 154 p.

The purpose of this thesis is to review the evolution of aviation organization within the Army division and to appraise the ROAD aviation organization.

The review begins with a discussion of circumstances in 1942 which led to the authorization of light aircraft for field artillery units. A chronological and historical review of the aviation organization follows. Logistical, as well as operational, aspects are included in the review. Sources of information include field manuals, tables of organization and equipment, and official historical publications.

It was found that the organization of aviation and the concept of operations have varied from one of decentralized control to one of centralized control. Factors which affected the degree of control and, thus, the organization are as follows: (1) concept of operations and mission of the entire division force, (2) mission of division aviation, and (3) number of aircraft authorized and available.

The appraisal of the ROAD organization is limited to the capability of the organization to support current missions of division aviation; no attempt was made to appraise the quantity or type of aircraft used nor the purpose or mission for which aircraft are employed. The appraisal included the following considerations: (1) responsiveness to the commander's needs measured in time, (2) efficiency measured in utilization of available aircraft, (3) operational capability of pilots, (4) division aviation special staff officer responsibilities, and (5) organizational and direct support maintenance.

The appraisal was based on facts and opinions obtained from members of active divisions. Questionnaires were distributed to selected students attending the U.S. Army Command and General Staff College and selected personnel in fifteen Army divisions. Questionnaires were sent to commanders of the following elements in order to obtain information pertaining to both operational and logistical considerations: (1) division artillery, (2) brigades, (3) cavalry squadron, (4) support command, (5) maintenance battalion, (6) aviation battalion, and (7) general staff.

In addition, a hypothetical organization proposed by the writer was examined and compared with the ROAD organization. Information extracted from questionnaires was also used in this part of the thesis.

This thesis makes conclusions pertaining to operational considerations. However, it was found that facts and opinions expressed by participants pertaining to the organization of aircraft maintenance were inconsistent, and, consequently no conclusion was drawn. Apparently, the subject of organization for maintenance cannot be restricted to aviation.

In the last chapter, the writer listed and discussed immediate and long-range considerations which, it is believed, should be examined prior to further reorganization. These considerations include both operational and maintenance problems.

17. THE APPLICATION OF THE NETWORK ANALYSIS SYSTEM IN OPERATIONAL PLANNING BY THE FIELD ARMY ENGINEER...A DOCTRINE, by Major Francis J. Walter, USA, 181 p.

Commanders and staffs must engage in active and continuous planning in order to make the most efficient use of available men, materiel, and facilities. The application of the network analysis system is one way to plan for the effective employment of resources. This management tool is widely used in both industry and in military engineer peacetime operations. However, Army theater of operations management doctrine does not expound on the use of the networking technique.

The objective of this thesis is to develop a doctrine for the use of the network analysis system in operational planning by the field army engineer. Research is confined primarily to the examination of planning in a limited or general war. A procedure is developed for the army engineer to match his engineer resources with operational requirements and use the networking technique to produce a plan that effectively outlines and schedules an operation.

In the past eight years the military and civilian industry have developed network modeling as a new approach to planning, scheduling, and controlling a project. Two pioneer approaches, themselves quite similar, are the basis for the most network technique variations--the Program Evaluation and Review Technique (PERT) and the Critical Path Method (CPM). Both concepts use the network modeling technique with certain unique principles. The network analysis system is the name given to network modeling by the U.S. Army Corps of Engineers. This technique prescribes a method of graphically portraying conventional planning and permits the application of both PERT and CPM theory in detailed planning.

The network analysis system consists of three basic aspects:

(1) The development of a model (also called a diagram) of the proposed plan of work. The model consists of interconnected arrows and circles. Arrows represent the tasks which must be accomplished in order to complete a project. Circles represent events in time. The model results from a logical analysis of the mission to be accomplished. A planner starts with a general concept and develops a sequenced group of required tasks, each placed in a pattern to show its relationship with the others.

(2) The evaluation and adjustment of the model to sequence the tasks in a way that will provide some positive assurance of reaching the desired objective within the limits of available resources.

(3) The use of the model to schedule and control the operation it represents.

The U.S. Army Corps of Engineers has demonstrated that the network analysis system is a very useful tool for planning and scheduling contract construction. Also, in a very limited way, both Seventh and Eighth Army engineers are using the technique to aid in planning engineering tasks.

As both a brigade commander and the staff engineer, the field army engineer continuously engages in operational planning. Army doctrine prescribes a general sequence of six phases to guide the engineer in planning. The methodology closely parallels the procedure for engineer operational planning which is outlined in several field manuals.

Doctrinally, the Army sequence of planning fails to provide detailed guidance to assist the planner in developing a method for planning project execution. A gap in doctrine seems to exist between the procedure established for deciding on a course of action and the next step where complete plans are prepared. In general, field manuals identify major tasks to be accomplished on common engineer projects; however, the job of integrating these tasks into a construction sequence and schedule is left up to the planner.

A doctrine is proffered in the thesis which applies the network analysis system to expand that part of planning theory which deals with the task of visualizing how a project will be completed. The system provides a means for developing a mission statement into a sequence and outline schedule of a planned operation. The proposed doctrine prescribes that a graphical model will be constructed to represent the sequence in which a project is to be executed. The model is also redrawn by orienting it to a horizontal time-scale and adjusting task-starting times so as to provide either the least costly, in terms of resources, or the least time-consuming plan. A unit-loading diagram is appended to the model to aid in project analysis.

The proposed doctrine integrates the network modeling technique with the six-step sequence for Army long-range planning. It can be a useful tool to the Army engineer when he plans combat service support operations. In this regard, network modeling may be of limited value in his planning if unit resources are absolutely fixed. However, this limitation is minimized through the careful scrutiny of all sources of labor.

The proposed doctrine can also be a useful tool in planning the engineer combat support for a major field army tactical operation. With minor modification, the doctrine has convincing application when used to plan major engineer projects such as a deliberate river-crossing operation.

The doctrine does not propose to stand alone as an all-encompassing planning tool. Rather, it is meant to help the army engineer in drawing in all the diverse aspects of his total planning effort. It helps him to maintain a good perspective of the total engineer requirement.

It is recommended that the proposed noncomputerized application of the network analysis system be tested in the field. Testing will likely stimulate increased interest in this planning tool and lead to appropriately revised Army planning doctrine.

18. THE MILITARY SIGNIFICANCE OF THE SINO-SOVIET BORDER IN THE FAR EAST, by Major Jesse Wang, USA, 169 p.

The Sino-Soviet border in the Far East developed into its present state over a period of more than three centuries. The primary force in the development of this border was Russia's eastward and southward expansion and the filling of a vaccuum between China and Russia. This thesis examines that portion of the Sino-Soviet border which delineates the area commonly known as Manchuria. This particular area was selected since it has been the primary focus of conflict involving Tsarist Russia and Imperial China, the Soviet Union and Republican China, the Soviet Union and Japan, and, more recently, the Soviet Union and Communist China.

If we except the Soviet offensives in 1945 that ended the Japanese occupation of Manchuria, the greatest conflict was that of Nomonhan in 1939, which was a major armor battle employing corps-size forces. Next in order of intensity was the Changkufeng incident of 1938, which involved division-size forces. The incident-prone nature of these and other localities, including river boundaries, has not been limited to the period of the Japanese occupation. Earlier examples can be cited. It is important to note that the major Soviet invasion routes of 1945 generally passed through the areas of critical incidents. These routes also corresponded with routes featured in Japanese offensive plans as well as in the scheme of fortifications and railroads.

The analysis of the border is performed in three major steps. First, terms used in connection with the border are defined, and the border itself is traced briefly. Second, the border is described in terms of the three main geographical frontiers--the western land frontier, the river frontier, and the southeastern land frontier. The development of the border is also traced with reference to significant events such as treaties, military conflicts, and functions of the boundary. Finally, the military significance of the border is assessed with reference to its development and functions by reference to three main questions. The first of these questions is, "Is the area, or part of it, a cause for armed conflict, or susceptible to incidents leading to armed conflicts?" The second, "Is the area of sufficient value to the powers on either side to warrant armed conflict?" The third, "Is the area suitable for military operations, and if so, to what extent?"

As a result of the analysis, the most likely trouble spots along the border are isolated. Each of the three sections of the border has incident-prone areas which have generally served as invasion routes in time of war. The magnitude and intensity of incidents and conflicts along the western and southeastern land boundaries, however, have been greater than those occurring along the river boundary. It is concluded that the most likely trouble spots along the border are on the two land boundaries, although in the event of all-out conflict, fighting would probably occur in all incident-prone areas isolated in this thesis.

19. EVOLUTION OF THE G-3 FUNCTION AT DIVISION LEVEL FROM 1917 TO 1945, by Major V. A. Henson, Jr., USA, 122 p.

This thesis traces the development of the G-3 function at division level from 1917 through 1945. Reference is made to other general and special staff sections only when necessary to fully describe the operations function. Doctrine and practice are compared and the changes in function correlated with major events and changes in organization and doctrine.

The thesis begins with a brief summary of the staff history of Germany, France, and Great Britain -- nations whose prior staff development affected the U.S. Army staff system. The background is completed by a brief sketch of the staff history of the U.S. Army prior to 1917.

The thesis proper is divided into three periods -- 1917 through 1919, 1920 through 1939, and 1940 through 1945. During each of these periods, the operations function is examined with respect to staff organization, duties and responsibilities of the G-3, and the relationship of the G-3 with other staff officers and subordinate commanders of the division. In addition, the formats of plans, orders, estimates, and standing operating procedures are examined to ascertain the scope of the G-3's responsibility.

During the period 1917 through 1919, our staff system was basically a hybrid of French organization and British terminology. The dominating influence of the French on our AEF staffs was a natural outgrowth of the situation which placed our forces under French command. The duties actually performed by division G-3's followed stated doctrine quite closely; the position of G-3, however, assumed greater importance than was originally intended.

Officers selected for division G-3 positions during World War I had received prior staff training and were in almost constant contact with their commanders. As a result, the commanders placed a great deal of confidence in their G-3's and often gave them a measure of directive authority. The detailed plans and orders used during this period were well suited to the deliberate character of the war.

The evolution of the division G-3's function during the period between the two world wars was marked by a refinement of existing methods and techniques with no abrupt or far-reaching changes being made. The Staff School at Fort Leavenworth became the center of staff doctrine and training. Mobilization planning and training assumed increased importance on the list of G-3's duties because of the peacetime role of the Regular Army. Cooperation and coordination, both within the staff and between the staff and the subordinate commanders, became the keystones of proper staff action. Finally, the formats for plans and orders were standardized and simplified.

The comparative ease with which the mobilization problems of World War II were overcome was, in part, a result of the staff theory and practice which had matured during the two decades following World War I. The experience gained during World War II produced additional refinements in staff procedure but did not significantly change the doctrine previously established.

The training of hundreds of commanders and staff officers at Fort Leavenworth, both prior to and during the war, served to promote understanding between officers serving in each of these positions and to minimize problems in command and staff relationships. During World War II, increased mobility and improved communications dictated the conduct of operations through the use of fragmentary orders rather than complete field orders. Standing operating procedures were used to further simplify and expedite operations.

The conclusions reached in the thesis include the following:

1) Divisions consistently augmented the number of personnel authorized the G-3 sections during periods of combat in order to increase the efficiency of the section.

2) The position of division G-3 assumed a greater importance than those of the other general staff officers during periods of combat.

3) The duties and responsibilities of the division G-3 steadily increased during the period covered by the study.

4) Potential problems arising from the relationship between staff officers and subordinate commanders were minimized by training both groups of officers in proper staff procedure.

5) Practice often preceded doctrine in staff theory and procedure.

The evolution of the G-3 function at division level did not end in 1945. The experience gained during the nearly thirty years covered by this study has, however, had a lasting effect on our staff doctrine. Many of the lessons learned, during both peace and war, are of immeasurable value today.

20. AERIAL SURVEILLANCE: CASE VIETNAM, by Major John S. Kark, USA, 156 p.

Problem

The purpose of this thesis was to develop an optimum U.S. Army aerial surveillance unit to support counterinsurgency operations. The need for this optimum unit exists and is based on the assumption that the U.S. Army will continue to participate in counterinsurgency operations.

Responsive capability to obtain timely and accurate information about the enemy, the weather, and the terrain is a major battlefield requirement. Army aviation aerial surveillance units provide the means to collect the information. To be effective, such aerial surveillance units must provide support which is responsive, flexible, and constantly available. The Army aerial surveillance effort will be improved when the optimum unit is adopted.

Treatment

The goals of this thesis were accomplished by examining the current U.S. Army doctrine pertaining to aerial surveillance units and analyzing the experiences of the 73d Aviation Company (Airplane Surveillance)(Light). The 73d Aviation Company supported counterinsurgency operations in the Republic of Vietnam during the period May 1963 through May 1964.

The U.S. Army aerial surveillance doctrine is in the process of improvement, especially as it applies to the support of counterinsurgency operations. This doctrine strives to achieve optimum results through the effective use of all available resources. The critical resources include the airborne sensors and platforms to carry these sensors. The sensors are aerial cameras, aerial radars, and infrared systems. The platforms include airplanes and drones. These airborne sensors and platforms which provide for Army aerial surveillance effort include aerial radar, aerial infrared, airphoto, and visual observation capabilities. Currently, the most significant operating aerial surveillance units are the aerial surveillance and target acquisition platoons organic to the aviation battalions of ROAD divisions. The U.S. Army is now in the process of developing an aerial surveillance unit for assignment at corps and field army levels. Specialized aerial surveillance units have been organized and deployed to the Republic of Vietnam to support counterinsurgency operations.

The 73d Aviation Company (Airplane Surveillance)(Light) was activated and deployed to the Republic of Vietnam in May 1963. It was the first company-size U.S. Army aerial surveillance unit to be committed in support of combat operations. The support was provided simultaneously to all divisions of the Army of the Republic of Vietnam and to the U.S. Army Special Forces. The average resources included 51 aviators, 1 nonrated maintenance warrant officer, 105 enlisted men, and 32 TO-1D airplanes. Through 30 April 1964, the company flew over 29,000 missions and accumulated almost 31,000 flying hours. The company aircraft were hit by Viet Cong fire on less than seventy occasions, and few were destroyed as the result of enemy action. A wide variety of missions were performed -- from aerial surveillance to free fall delivery of live pigs in baskets, from adjustment of artillery fires to aeromedical evacuation, and from marking targets for Vietnamese Air Force tactical air controllers to the escort of ground convoys. However, the missions of aerial surveillance, reconnaissance, target acquisition, airphoto, and command control and liaison accounted for 60 percent of all missions flown. The company demonstrated that U.S. Army aviation is able to completely integrate its capability with the ground effort. The effective mission accomplishment was officially recognized on 29 June 1964, when the Department of the Army awarded the Meritorious Unit Commendation to the company -- the first U.S. Army aviation unit in the Republic of Vietnam to be so recognized. The operational experiences of the 73d Aviation Company (Airplane Surveillance)(Light) have clearly demonstrated the effectiveness of Army aerial surveillance support in counterinsurgency operations. These operational experiences greatly influence the organization, mission, and employment of the proposed optimum unit -- the aerial surveillance company (general support).

The primary advantage of the proposed unit is that it is optimized for self-sufficiency in mission performance, administration, and logistics. The resources include 42 officers, 3 warrant officers, 214 enlisted men, and 24 OV-1 (Mohawk) medium observation airplanes. The operating elements are four aerial surveillance platoons (four aircraft each) and an armed aerial surveillance platoon (six aircraft). Mission capabilities include visual, airphoto, aerial radar, and aerial infrared observation. Organic armed aircraft are included to attack the enemy by fire and to confuse him regarding fire delivery capabilities of the remaining surveillance aircraft. The company is designed to operate from a maximum of 6 dispersed locations and to support a 4-division-size force over an area up to 400 by 600 kilometers.

Findings

The doctrine, organization, and equipment, as they pertain to the U.S. Army aerial surveillance effort, are in the process of improvement. A valid requirement exists for an optimum aerial surveillance unit to support counterinsurgency operations. This requirement is based on assumed continued U.S. Army participation in counterinsurgency operations.

The recent operational experiences of U.S. Army aviation units, while supporting counterinsurgency operations in the Republic of Vietnam, are a source of valuable information. This information should be used to improve the U.S. Army aerial surveillance capability.

The proposed aerial surveillance company (general support) will best satisfy U.S. Army requirements for effective aerial surveillance support now and within the foreseeable future.

21. LEADERSHIP PRINCIPLES: HOW THEIR USE BY LIEUTENANT GENERAL JOHN BURGOYNE AND MAJOR GENERAL HORATIO GATES INFLUENCED THE ENGAGEMENT AT SARATOGA, 1777, by Major C. R. Leach, USA, 121 p.

This thesis attempts to evaluate the use of leadership principles by the two chief protagonists of the Battle of Saratoga in the Revolutionary War. Several ideas develop as corollaries to the chief theme: (1) leadership principles will not of themselves insure victory, (2) ignorance of their effect or their misapplication may contribute to the defeat of a military force, and (3) passage of time does not invalidate the principles of leadership.

The criteria of leadership used are those set forth in Department of the Army Field Manual 22-100. Against these principles the actions of Lieutenant General John Burgoyne of the British Army and Major General Horatio Gates of the American Army are measured. Leadership is defined in terms of the environment, the leader, and the led; and the thesis presents data on each of these three topics. The presentation illustrates that no military engagement is of itself an isolated entity.

The political environment in both Great Britain and the newly declared independent states of North America is reviewed. The political direction of the war, as well as the military chain of command on both sides, is discussed to show the influence which the political and military environment exerted on the chief protagonists.

The qualities, conditions, and motivations of the subordinate officers and common soldiers, both British and American, are described, thus illustrating the characteristics of the forces the two major commanders led.

Biographical data on Lieutenant General John Burgoyne of the British Army and Major General Horatio Gates of the Continental Army, the leaders at the Battle of Saratoga, prove these men to be distinct individuals possessed of personal ambitions, motivated by private concerns, and influenced by the environments in which they lived.

The details of the British plan for the Campaign of 1777 and the preparations that were made for its execution are explained. A discussion of the plan is vital to an understanding of the Battle of Saratoga because the original plan proposed by General Burgoyne was altered. His execution of the resulting scheme, not wholly his own, was marred by defeat which may in some measure be attributed to the complexity of the plan and the lack of coordination between the British Ministry, the commander in chief in America, and General Burgoyne himself. The preparations for the campaign of the Canadian Army are also described, full responsibility for any inadequacies therein being directly attributed to General Burgoyne, who exercised undisputed total supervisory authority during the preparatory period. Since American plans and preparations, unlike those of the British, entailed only the relatively simple task of arranging to counter the enemy's moves, comparatively little attention is accorded to colonial preliminaries.

The application and misapplication of the principles of leadership by both major commanders are also discussed. Details are furnished to give an overall view of the conduct of the separate engagements of the Battle of Saratoga. The tactics employed by both major commanders are analyzed to indicate positive or negative application of leadership principles.

Concluding this thesis is an evaluation of the leadership exercised from the inception of the plan of the campaign to the final denouement on the plains of Saratoga. The actions of both Gates and Burgoyne, as reviewed in the text of the thesis, are measured against each principle of leadership previously introduced from Department of the Army criteria.

22. A STUDY OF THE AERIAL INTERDICTION OF RAILWAYS DURING THE KOREAN WAR, by Major Frank J. Merrill, USAF,

The purposes of this thesis are as follows:

(1) To compile a brief but concise history of the aerial interdiction of railways during the Korean War.

(2) To evaluate the effectiveness of these efforts as they might relate to the conduct of the total war effort.

(3) To make recommendations pertaining to the future conduct of aerial interdiction.

Chapter I presents a general introduction to interdiction and cites two historical examples of previous railway interdiction campaigns--Operation STRANGLE conducted in support of the Italian campaign during World War II and the "Transportation Plan," the interdiction campaign that preceded the Allied invasion of Normandy.

Chapter II describes the prewar Korean transportation systems and discusses the effects that geography and climate had on the development and maintenance of this system.

Chapters III through VIII present a historical account of the railway interdiction activities of the Korean War broken down by chapter to coincide with the major ground campaigns of the war. Chapter breakdown by major campaign and dates is as follows: Chapter III, "The North Korean Attack and the Retreat to the Pusan Perimeter, 25 June - 15 September 1950"; Chapter IV, "The Inchon Invasion and the United Nations' Offensive to the Yalu, 15 September - 2 November 1950"; Chapter V, "Communist China's Intervention and the Second United Nations' Retreat, 3 November 1950 - 24 January 1951"; Chapter VI, "United Nations' Spring Offensive, 25 January - 21 April 1951"; Chapter VII, "Communist Spring Offensive, 22 April - 8 July 1951"; and, Chapter VIII, "Armistice Talks Mark a New Phase in the War, 9 July 1951 - 27 July 1953."

Chapter IX presents a brief look at the major countermeasures used by the Communists to counteract the effects of the United Nations' campaign against their railway network.

Chapter X, "Interdiction in Retrospect," presents conclusions relating to the effectiveness of the various specific interdiction campaigns; evaluates the effectiveness of the overall program; and, finally, makes recommendations pertaining to the conduct of future interdiction campaigns.

23. AN ANALYSIS OF COMBAT SERVICE SUPPORT TO THE ROAD DIVISION, by Major J. E. Munnelly, USA, 178 p.

The thesis analyzes combat service support of the ROAD mechanized infantry division. Three methods are employed for analysis: a historic appraisal and background of present organizations, a dynamic closed type war game, and a review of doctrinal statements. The thesis focuses primarily upon the adequacy of the division support command to perform its mission.

Combat service support implies much more than supply, maintenance, and services. Such diverse functions as logistics, personnel, civil affairs, and labor are also encompassed by the term. To limit the scope of the paper, only the logistics functions and organizations to perform that mission in a ROAD mechanized infantry division are considered.

Shortages in shipping in World War II led the War Department to apply strict principles of austerity in the design of combat service support units in division. Two principles were followed: pooling resources at higher headquarters and providing divisions with only that needed for combat operations.

The field army was charged with pushing supply installations forward within reach of divisions. In actual practice the system failed to perform in accordance with doctrine. Divisions began a practice of establishing division dumps in their areas. These dumps were the forerunners of the present distributing points operated by ROAD divisions.

The ROAD division organization produces a major step in organizing combat service support along functional lines. Direct support maintenance is performed centrally in the maintenance battalion. Items of supply required by the division flow through a supply and transport battalion. The medical battalion has an ambulance and clearing capability in each subordinate unit.

The size and composition of units comprising division support commands may vary in supply, maintenance, medical and transport elements according to the mix and number of maneuver battalions in the type of division supported. The support command is an organic combat service support element of armored, airborne, infantry, and mechanized infantry divisions.

The ROAD organization allows a greater degree of flexibility to division commanders than previous organizations. Support commands may be tailored to support the specific mix of a division. When the mix of battalions is varied significantly, adjustments in personnel and equipment are required. Augmentation is necessary from outside the division for special or independent operations.

The war game casts the division in the role of conducting a delay. The delay introduces problems in medical evacuation, maintenance, and supply operations conducted in the face of constant enemy pressure not common to the customary attack or defense situation. Command and control become more critical to successful operations. To focus primarily upon the division support command capability, the paper assumes no interruption of combat service support from field army sources. The division is required to conduct the delay on successive positions in a corps zone.

The division planned to displace the support command four times during the retrograde operation. However, the initial success of Aggressor forced the division to move the support command during daylight. The next delay position was bypassed because of the rapidity with which Aggressor penetrated friendly forward positions. These developments indicated a need to move the support command early in a delaying operation, and move it sufficiently far to the rear so that it could establish division installations and perform its primary mission.

Aggressor employed a nuclear weapon which effectively destroyed the principal elements operating in one brigade trains area. Minimum support was provided to the brigade thereafter only by extreme measures. The maintenance battalion was able to support the brigade with one mechanical maintenance section. The medical battalion reacted by dispatching two medical teams from the headquarters and main support company. This procedure was used to minimize the effects of an enemy nuclear attack only. In this instance the medical team remained with the brigade to provide medical service. Thereafter,

only through the support of field army was the medical service and evacuation problem solved. In spite of frequent movements to the rear and the enemy employment of nuclear weapons, the war game indicated that the support command organization was essentially adequate to provide combat service support to the division.

The responsibility for planning and operations of combat service support functions is charged to the G4 and the support command commander. The G4 is reestablished as a general staff officer. He can devote more time to planning and coordinating logistical activities for the division. The support command commander is the division logistical operator. Relationships between the two must be harmonious and closely coordinated.

It was thought that staff relationships between the division surgeon and the support commander might become a problem. This is not necessarily the case. Although the surgeon is allowed a wide degree of authority on medical matters, the medical situation in combat may be of sufficient magnitude to fully require his efforts to resolve the entire medical problem.

An area of potential conflict exists in transportation planning. The division transportation section often must provide assistance to the division staff. It appears that the division staff needs augmentation for transportation planning and movement control.

There appears to be excessive layering of command and control for supply in the division. The supply sections retain technical service identification for class II and IV supplies. It is considered that these sections can be consolidated in an effort to save spaces and provide more efficient operations. Management of supply is performed by the division supply office. Supply operations are carried out by the supply and service company. There are a total of ninety-seven officers and men involved in supply operations in the division support area. This total does not include personnel of the transportation motor transport company involved in hauling supplies. It appears that the number of individuals involved in supply operations might be excessive to the division needs.

Improvements for water supply should be achieved by transferring the responsibility to the division support command. The engineer water points are generally located in close proximity to the brigade trains and division support areas. Greater efficiency and provisions for local security, medical inspection, and movement should be obtained by transferring water supply equipment and personnel to the supply and service company. Since potable water is a class I consumable, supply of potable water could be assumed by the forward supply sections.

Changes recommended in the thesis are considered to be merely refinements of the present organization. Although individual problem areas are identified, the organization appears to be structurally sound. Assuming doctrinal support from field army sources, the division support command appears to be capable of providing the necessary combat service support to the division. A full test of its capability awaits the ordeal of actual combat.

24. A DOCTRINE FOR THE EMPLOYMENT OF A ROAD DIVISION TO ENCOURAGE A FALTERING GOVERNMENT, by Major Howard W. Snyder, USA, 207 p.

There is no current doctrine in the U.S. Army for the employment of an infantry division to encourage a faltering government. The need for such a doctrine has become critical inasmuch as the United States has assumed the leadership of the Free World during and since the second world war. This need is recognized in FM 61-100, The Division, by the establishment of the role of encouraging a faltering government for the ROAD division.

The United States has various means to resolve most of the violent threats to the established political order. However, the manner of using these means is in a nascent state. If these problems of political order are not resolved by political actions, then, by default, military action of some type will likely be required. Conventional, direct military action may produce quick results, but the permanence of these results is questionable. In 1956, the Soviet Union resolved its problem of political stability of the Communist government in Hungary by the means of a Soviet army consisting of ten divisions committed in a military offensive. This was a crude action that produced the immediately desired results, but in long-range view it served to publicize permanently a Communist failure. Fewer means used with more finesse or in an adroit manner could have produced the desired results without the stigma of a bully.

The United States has limited itself in its military means in order to enjoy the benefits of other pursuits. Thus limited in military means and in keeping with recognition of the right of national self-determination, the U.S. military commander must be adroit in employment of his available strengths to reduce violence that threatens political stability. The difficulty of using finesse of this type was displayed in Lebanon on 15 July 1958. A U.S. Marine battalion landing team conducted an amphibious assault on the beaches south of Beirut in the traditional military manner. The Lebanese Army commander did not know if the Marines were attacking or helping his forces. The Marine battalion commander was not sure who or where his enemy was. The next day the same Marine battalion was going to fight its way through Beirut in the traditional manner to seize the dock areas. If the intervention of the American ambassador had not prevented this attack, the Marine battalion would have fought the Lebanese Army as well as the opposition forces. Thus instead of restoring order, the Marine battalion would have added to the disorder. Conventional military doctrine may frequently be inappropriate in the encouragement of a faltering government; a more suitable doctrine is needed.

To evolve an appropriate doctrine, four historical examples of faltering governments which were encouraged by military forces of approximate division size were analyzed in this thesis. Each faltering government was studied to determine the causes which made it weak. Then the capabilities and methods of employment of the military forces committed to encourage these governments were analyzed for basis of a new doctrine. After the analysis of the historical examples was concluded, a study of political theory as it related to governmental stability was conducted. Government stability was found to be one of the expectations of its citizen body.

Failure of the government to meet these expectations could lead to governmental instability.

The capabilities of the current ROAD infantry division were then studied in comparison to the capabilities of the military forces used in the four historical examples previously studied. The ROAD division was found superior in firepower, communications, mobility, and integrity of command. The roles in which the ROAD division may be employed were then studied. These roles were show of force, truce enforcement, international police action, legal occupation, restoration of order, protection of personnel and property, and civic action.

The capabilities of the ROAD division and the causes of government instability were analyzed in light of the four historical examples, and a doctrine was evolved. This doctrine places the division commander and his staff in the front ranks of the conflict. The violent conflict is held in abeyance, if possible, while conflicts of interest are negotiated at the conference table. Military action must support, not preclude or undermine, these negotiations. The military commanders must be willing to negotiate and capable of negotiating with political leaders. If military force is necessary, it must be applied in the precise amount at the proper place with a full awareness of the political implications. Military force may be likened to a poison drug which, when skillfully used at the proper time, may save and not destroy.

The doctrine developed by this study should increase the capability of the ROAD division to encourage a faltering government. Where the Soviet Union used ten divisions and acquired a political stigma in stabilizing the faltering Communist government in Hungary, it is hoped that a division or less of U.S. forces, through use of this doctrine, can stabilize a faltering government while avoiding unfavorable Free World reaction.

It is realized that this doctrine is not the complete answer to this problem. This doctrine is not a substitute for leadership, knowledge, or will power, but it is a guidepost in military tactics and strategy heretofore largely nonexistent.

25. PROJECT MANAGERS: THE CONCEPT IN PERSPECTIVE, by Major Ronald M. Obach, USA, 97 p.

The purpose of this thesis is to analyze and evaluate the project management technique of management as practiced today by the U.S. Army Materiel Command. This technique of management is receiving increasing attention from managers both in civilian industry and in the Department of Defense as a possible solution to the management problems inherent in the development of complex weapons systems and equipment.

Project management is a result of the search by managers in industry and in government for a new organizational concept to cope with the development of sophisticated weapons systems required by the Military Services in the nuclear age. Thus, it is possible to trace the origins of project

management back nearly twenty years. However, it was only three years ago (in 1962) that project management was established in AMC as the management pattern for that organization.

Project management provides a single central point for decision making and for obtaining and providing information concerning the status of the item being project managed. This system attempts to combine the advantages of the clear-cut lines of responsibility and authority inherent in the vertical or line organization with the benefits of maximum utilization of scarce skills and talents afforded by the horizontal or functional organization. In addition, project management is a unique form of management and as such may not be used indiscriminately. Its application is not suitable for all situations and in all environments -- proponents make no claims that project management is the answer to all of management's problems.

In AMC, weapons systems or equipment which meet certain established criteria are project managed. These criteria concern the dollar cost of the item, its complexity, demonstrated command interest in the item, its contribution to Army modernization objectives, and finally, the urgency of the need for the item by the using units.

It is not enough to know the circumstances under which an item becomes a project and the organizational concept involved. To fully understand project management one must attain an appreciation of the subtleties of the environment in which the project manager operates. The environment of the AMC project manager is characterized of a complex set of relationships with industry, other Government agencies and activities, and the project manager's own organization -- with the project manager at the center of these relationships. These relationships influence the actions of the project manager as he seeks to accomplish his objectives. Other constraints affect the project manager and limit his freedom of action. Among these constraints are the controls imposed by the Congress, Government procurement laws and regulations, and even the traditional military hierarchy, of which the military project manager is a part.

The project management system in AMC has problems. For example, projects exist for only a relatively short time, yet project managers attempt to perpetuate their projects and thus their jobs and the jobs of the personnel on their staffs. Another problem concerns the fact that projects and their managers are unique and distinct; the project managers wear the four stars of the Commanding General of AMC. These project managers are convinced of the importance of their tasks and pursue their projects vigorously. Unfortunately sometimes losing sight of the objectives and missions of the overall organization, they fall prey to a phenomenon known as "projectitis."

Project managers are criticized for "freewheeling"; they can seek support for their project from any of the other elements of AMC without first obtaining approval from AMC Headquarters. Though "freewheeling" cuts red tape, it also leads to the situation wherein two or more project managers place their requirements on a single support organization or agency. If the

resources of that support agency are already strained or limited, a conflict is created in which the supporting agency must provide the support to the project managers in order of priority; yet it does not have the information concerning the relative importance of the various projects.

AMC regulations specify that project managers are totally responsible for their projects. Included in this responsibility is the direction of contractor's efforts in those instances when project managers must go to industry to fill their requirements. However, these regulations or directions conflict with the statutory authority of Government contracting officers; and while the dilemma must eventually be resolved in favor of the contracting officer under current directives, other alternative solutions are discussed in this thesis.

There are other problems of project management; several are already fully developed, and others are just emerging. A problem in this latter category concerns "span of control". This principle of organization is in danger of being slighted as a result of the successes achieved by AMC project managers. Thirty-six items are currently project managed in AMC, and remarks have been made in AMC Headquarters that the organization can accommodate fifty. Other fully developed problems include the difficulties experienced in attracting high quality personnel for project manager staffs and the ambiguities of the relationship between the project manager and the commanders of the major subordinate commands of AMC when these individuals are collocated at the same installation.

Many of the problems of project management can be solved or their adverse effects greatly minimized. A few of the problems must be simply endured. Whether the advantages of project management outweigh the problems depends upon its particular application. In AMC, the advantages of project management are decisive.

26. REAR AREA SECURITY IN THE FIELD ARMY SERVICE AREA, by Major G. K. Otis, USA, 136 p.

This study evaluates the adequacy of current U.S. Army doctrine for security in the field army service area. The evaluation is based on historical experience modified by modern capabilities. A detailed analysis of the Russian Partisan Movement in the rear areas of the German armies during World War II develops certain constants and parameters that remain valid independent of time. An investigation of current Soviet Army tactical doctrine identifies that country's capabilities for employing regular forces and partisans against the rear area of a future invader. Current U.S. rear area security doctrine for the field army service area is considered to describe the size and extent of the field army service area and the concept for protecting this critical area from enemy actions. Then, U.S. rear area security doctrine is challenged by the threat exemplified in World War II and current Soviet doctrine in a three-phased test model. The evaluation of current rear area security doctrine is evolved in conclusions that identify both adequacies and inadequacies.

The World War II Russian Partisan Movement provides a historical example of large-scale guerrilla forces operating against the rear area of an army. Adequate translations of German documents, Russian reports, and prisoner of war interrogations are available to establish the characteristics of this partisan uprising. These sources yield the fact that Russian civilians behind German lines took refuge in dense forests and swamps to escape German depredations. A Soviet plea for partisan bands to form in the German rear areas was followed by aerial supply to support those who responded to the call. As the bands grew in strength, they were directed by the Soviets to attack German lines of communications and supply installations. At its peak, the Russian Partisan Movement reached a strength of 250,000 and required the employment of as many as 25 German divisions to defend against it. The nature of the Russian Partisan Movement, the tactics used, and the German failure to counter effectively this menace provide a basis for analyzing doctrinal concepts to counter a similar threat.

Current Soviet doctrine is clearly established in Soviet military publications. Available literature indicates that the Soviet military is aware of the vulnerability of the lines of communication of a modern mechanized army. The use of paratroopers and helicopterborne forces to destroy the rear area installations of an enemy is an important part of Soviet doctrine. In addition, the Soviets plan to employ a partisan force in the enemy's rear that will operate in conjunction with their regular forces in any future war. Profiting from their studies of World War II, particularly the Russian Partisan Movement, the Soviets continue to train their soldiers for both conventional and irregular warfare; and special emphasis is given to operations in an enemy's rear area.

U.S. rear area security doctrine under COSTAR has recently been evolved. It provides for a field army support command organization to assume territorial responsibility for the field army service area. The field army support command commander delegates responsibility for rear area security to one of his major subordinate commanders, the army support brigade commander.

Rear area security doctrine requires the area commander to coordinate unit and installation defense plans and to provide for mutual assistance in the event of attack. Each unit and installation in the field army service area is responsible for its own local defense and for preparing security plans within the policy outlined by the area commander. The doctrine excludes active air defense and operations against enemy forces large enough to endanger the command as a whole. These activities are considered to be outside the scope of rear area security. In addition, combat units are not assigned rear area security missions unless the actual enemy threat warrants.

The three-phased model is presented to test rear area security doctrine. In general a U.S. type field army is deployed in Bellorussia in a general war environment. The first phase depicts a situation of minor guerrilla actions against the army rear area. The second phase portrays a growing partisan movement requiring combat troops for rear area security mission in the field army service area. The third phase presents a rear area threat that endangers the entire field army and requires the diversion of major

tactical units to operate in the rear. Each phase of the model is presented in the form of a special situation that outlines the friendly and enemy status. The threat (either potential or actual) is established using the factors derived from the research into the Russian World War II Partisan Movement and current Soviet doctrine. Appropriate U.S. rear area commanders employ current U.S. rear area security doctrine against the actual or potential threat, and the results of the test model are discussed.

It is concluded that rear area security doctrine adequately provides for passive defensive measures such as planning and coordinating installation security measures and for integrating the units located in the field army service area into these security plans. A weakness in rear area security is its failure to provide for the timely assignment of combat units to rear area missions to counter a potential threat. Future studies of rear area security doctrine should consider revisions that will eliminate the inadequacies of current doctrine.

27. LEADERSHIP IN THE CIVIL WAR: OFFICERS OF THE UNION VOLUNTEER ARMY AT DIVISION LEVEL AND BELOW, by Major Robert E. Price, USA, 171 p.

In the Civil War, the "great captains" of the Union force were professional officers who had been trained in the Regular Army. They were the Regular Army's one major contribution to Northern victory. Otherwise, the small professional army remained insignificant. For all intents and purposes, the huge volunteer army of citizen-soldiers was the Union Army.

This study concerns the not-so-great captains, the volunteer officers who commanded not corps and great armies, but divisions, brigades, and regiments. It examines their successes and failures in the art of dealing with men, their strengths and weaknesses, the leadership problems they faced, and the techniques they used to deal with those problems. Its purpose is to determine those leadership lessons learned which have practical value for officers today. It is primarily a study of people, not battles. "The drill regulations, the muskets, and the cannon are all out-dated. But, the human problems are fresh even in this age of computer analysis."

Most of the source material for this study was found in official records and in letters, diaries, and memoirs of officers and men of the volunteer army.

During the first months of the war, the volunteer recruit was a young and independent-minded "sovereign in uniform." Most of his leaders were merely recruits with officers' shoulder straps and knew no more of the military than he. But, generally, his officers were intelligent and motivated. They burned late candles over drill manuals and sketchy literature on leadership. Some fortunate ones learned from senior officers who had once been in the Regular Army. All learned by trial and error, and slowly--very slowly--the volunteer force began to look less like a mob and more like an army.

But Appomattox was four years, many battles, and many campfires away. During those four years a number of lessons of leadership were learned which are still valuable for the modern officer's professional consideration:

1) A professional cadre of officers and noncommissioned officers is essential for mobilization of untrained units. Depriving the volunteer units of experienced cadres during the first year of the Civil War resulted in much floundering and groping. Had a nucleus of Regular Army personnel been placed in volunteer units early, training and discipline would have been greatly enhanced and the war would probably have been shortened.

2) Acceptance of low-grade personnel into service has a demoralizing effect. In the volunteer army the low-grade personnel were the bounty-jumpers and substitutes. The resulting desertions caused a demoralizing depletion in ranks. The unreliability of these men in battle deprived loyal soldiers of the confidence they needed in their comrades.

3) The professional officer may experience problems of adjustment when assigned to duty with the citizen soldier. Such problems may arise in regard to modes of dealing with the enlisted soldier or in relationships with citizen-officers. The officer must call on his tact and flexibility and make an earnest effort to work in harmony with his civilian collegues. Senior officers should be aware that such friction may arise between subordinate officers.

4) Further research is suggested regarding the effects of prior relationships on discipline in Reserve and National Guard units after call to active duty. A major deterrent to discipline in the volunteer army early in the war were previous associations of officers and men who had grown up together and worked together in their home communities. This experience suggests an examination of the effects of such associations on discipline during modern mobilization.

5) Men must know that their officers are not lacking in personal courage. The volunteer soldier placed a high premium on personal courage. He was quick to detect--and to scorn--any officer who possessed too much of "the rascally virtue called caution." Generals were not exempt from scrutiny, and men expected to see them at the front frequently.

6) No officer will enjoy the confidence and regard of his men unless they are convinced he is doing his best to look out for their welfare. In the volunteer army, a major morale factor was the officer's concern for his men. He was hardly expected to make the soldier's life comfortable, but he was expected to prevent unnecessary hardships and to mitigate the necessary ones as much as possible.

7) Troop movements require leadership of the highest order. Poorly planned and conducted troop movements, whether by foot march or by conveyance, have an adverse effect on morale. Many of the volunteer's complaints concerned officers' inefficiency, thoughtlessness, and neglect during movements, particularly during marches. Movements are perhaps even more complex

today. Officers' carelessness can result in unnecessary fatigue and discomfort, which in turn cause lowered morale and increased straggling.

8) Information enhances discipline and morale and helps prevent fear and panic. Civil War commanders experienced problems of discipline (regarding guard duty and camp sanitation, for example) because the young volunteer was not fully informed of their importance. He craved news of happenings around him, and news was a definite morale factor. Officers who insured that their troops were informed of the tactical situation found that they not only fought more intelligently but were less apt to panic.

9) Leaders should be aware of the significance of sectional and racial differences among their men. The Western soldier, for example, responded more favorably to less stringent discipline, whereas the soldier in the East was more motivated by the fine points of soldiering. Negro soldiers had difficulty adjusting to changes in climate and suffered heavily from disease. Commanders should be informed of such phenomena so that they may act accordingly.

10) Most soldiers prefer their commander to be a firm disciplinarian. They dislike the martinet but appreciate the disciplinarian--in spite of their gripes. This is evident in volunteer soldiers' comments about their Regular Army officers.

11) The leader who is gentlemanly in his dealings with subordinates gains--rather than loses--their respect. Far from being interpreted as weakness, courtesy on the part of the superior enhances the subordinate's morale and his regard for the leader. Numerous examples of this were brought out in the study. Soldiers particularly appreciated in officers the virtue of approachability.

12) Discipline imposed by the well-regarded leader receives a more whole-hearted response. Examples in the study indicated that when men felt a high regard for their officers they reinforced commanded discipline with self-imposed discipline.

13) Unorthodox techniques of leadership are sometimes appropriate. A young staff officer, for example, stemmed a panic by striking men with his sword. A general prevented straggling in his own brigade by having his troops hoot and jeer at stragglers from other units. Such unusual methods were effective in unusual situations.

14) Parade ground discipline and battle discipline are not conclusively related. Some regiments drilled superbly but panicked on the battlefield. The Army of the West (particularly Sherman's forces) had little discipline by the usual standards but marched hard and fought well.

15) Soldiers will not repeatedly carry out orders which they consider stupid and dangerous. Eventually they will balk. They may continue to go through the motions, but they will find a way to thwart those orders. Volunteer troops were repeatedly massed and thrown against rebel earthworks in frontal assaults and were repeatedly repulsed with heavy losses. Finally, when they had made up their minds that their lives were being wasted, they disobeyed.

16) The commander who has undisciplined officers will have undisciplined troops. The commander who is unwilling to correct negligent officers can hardly expect his officers to correct negligent men.

17) Strong leadership is required to prevent troops from looting. Even well-disciplined troops will loot unless firm precautions are taken. When troops are legitimately "living off the land," as may sometimes happen, they should clearly understand the limits of authorized confiscation.

18) Public recognition of deserving individuals and units is an effective tool for development of morale and esprit. Volunteer commanders were generous with praise for the achievements of men and units. General orders, promotions, and personal compliments of commanders were effective motivators.

19) Identification with the unit enhances morale and esprit de corps. Volunteer commanders aided this identification by recognizing regimental achievements, promoting competition between regiments, and encouraging symbolism. These techniques are no less effective today. It is the wise commander who lets the "banners flaunt and bugles blow."

"We can always learn more /about leadership/ and sometimes it can be learned from the records of a war fought more than a century ago."

28. A STUDY OF LEADERSHIP IN THE 1ST INFANTRY DIVISION DURING WORLD WAR II: TERRY DE LA MESA ALLEN AND CLARENCE RALPH HUEBNER, by Major R. J. Rogers, USA, 110 p.

The most critical commodity on the battlefield is leadership and each war has provided the background for many leadership studies. Our Armed Forces service schools have conducted numerous studies in an effort to establish leadership guidelines which can be presented to military students for their own evaluation and application. Leadership is not an exact science; no two leaders are identical, nor should they be. Our service schools have recognized this and have cautioned students against copying the mannerisms of a particular leader. Each leader must preserve his own identity and capitalize on his dominant leadership characteristics.

The leadership of Major Generals Terry Allen and Clarence R. Huebner in commanding the 1st Infantry Division during World War II is a fine example of two generals who, in succession, commanded a division with great success. As leaders they were entirely different. Each capitalized on his dominant characteristics.

General Allen, with his magnetic personality and his bold aggressive leadership, achieved an identification with his troops, probably unparalleled in the history of the U.S. Army. He had a great common touch and was literally loved by his officers and men. They emulated his aggressiveness and his independence with the result that esprit de corps in the division was extremely high. It was the magnificent spirit of the 1st Division which made up for training deficiencies and lack of combat experience during the early days of the North African campaign.

The 1st Division landed near Oran, Algeria, 8 November 1942, and drove inland to seize the city. Shortly after the Oran operation, the division was fragmented, most of the units being attached to the British forces in North Africa. General Allen bitterly protested this action and became antagonistic toward higher headquarters; it was a feeling which he retained throughout the campaign in North Africa and later in Sicily.

The 1st Division was reunited in March of 1943 and made successive night attacks at Gafsa and later El Guettar where it won a great victory in defeating the 10th Panzer Division.

At the end of the Tunisian campaign, the division went through a training period in the Oran area. It was during this period that the "Oran incident," involving the 1st Division troops and service of supply troops, took place.

The division's next combat operation was the invasion of Sicily. The "Big Red One" landed at Gela, Sicily, and on D+1 stopped the Hermann Goering Panzer Division's attack and saved the beachhead. The next major action was the battle of Troina during which the division withstood twenty-four counterattacks before taking its objective.

The spirit and independence of the 1st Division had grown with each victory until finally General Bradley decided that to insure the proper teamwork in his corps, he had to separate General Allen and the 1st Division; an act which was bitterly resented by the officers and men of the 1st Division.

General Huebner, in taking command of the division, had the difficult task of gaining the confidence of the division while preparing it for Normandy. He was bitterly resented at first and in his efforts to gain control of the division, he made himself as unpopular as Allen had been popular. Gradually through his personal ability, sound training methods, insistence on professionalism, and calm determined manner, he earned the confidence and respect of the division. To complement its great fighting spirit, the 1st Division, under Huebner, developed renewed pride and confidence in its fighting ability.

At Omaha Beach the "Big Red One" came through "in the clutch" just as it had at Gela, Sicily, under Allen. General Bradley felt that the 1st Division had to lead the assault at Omaha Beach, just as General Patton earlier

had demanded the use of the division for the Sicily invasion. In the light of history, their decisions were sound.

After the invasion, the division played a key role in Operation Cobra, the breakthrough at St. Lo. The division drove to Mortain and then to Mons. Later, when the Siegfried Line was reached, Huebner's 1st Division was given the mission of penetrating the line and seizing Aachen, the first major German city to be taken by the U.S. Army during World War II. Aachen was taken only after prolonged rugged fighting, and here the "Fighting First" showed the same dogged determination that it had displayed at Troina, Sicily, under Allen.

Immediately after the fall of Aachen, the division made the main attack for VII Corps in the November offensive in the Huertgen Forest. At the conclusion of the battle of the Huertgen Forest, General Huebner was given command of V Corps. When he left the division the officers and men missed him almost as much as they missed General Allen.

Both General Allen and General Huebner fought the 1st Division with skill, aggressiveness, determination, and success. Both loved the division, had great concern for the welfare of their men, and did everything possible to enhance the esprit de corps. They were, however, complete opposites in personality, attitude toward discipline, and manner of operation.

Allen was warm, friendly, sincere, and enjoyed a backslapping informal relationship with subordinates. He was not a strict disciplinarian. He depended on a combination of teamwork, unit esprit, and strong personal leadership. He operated in a relaxed manner, did not concern himself with details, and placed maximum responsibility on his staff and commanders.

Huebner, in contrast, was reserved but maintained a dry sense of humor. He maintained a formal military relationship with subordinates. He was a strict disciplinarian and believed that a well-disciplined unit would function more efficiently in combat with fewer casualties. He was a stickler for detail and exercised close supervision over his staff and commanders, not that he tried to do their jobs, but he was aware of all aspects of their operations.

In conclusion, both generals were completely successful leaders but the manner and the techniques by which they each achieved great leadership were completely different. Allen was unorthodox and a persuasive leader whereas Huebner was orthodox and authoritarian.

Both leaders capitalized on their natural character and personality traits; each was perfectly suited for the time and circumstances which confronted the "Big Red One" during the critical phases of World War II.

29. A HISTORY OF THE CIVIL GOVERNMENTAL SUPPORT PROVIDED TO THE 12TH U.S. ARMY GROUP'S REFUGEE AND DISPLACED PERSONS OPERATIONS BY THE ALLIED NATIONS OF FRANCE, BELGIUM, AND LUXEMBOURG FROM 6 JUNE 1944 THROUGH 15 JANUARY 1945, by Major Kenneth L. Skaer, USA, 108 p.

This thesis portrays a history of the civil governmental support provided to the 12th U.S. Army Group's refugee and displaced persons operations by the Allied governments of France, Belgium, and Luxembourg from 6 June 1944 through 15 January 1945. The purpose of this thesis is twofold. First, it evaluates the significance of civil assistance available from three different governments. Secondly, it develops documentary evidences of problem areas isolated by the 12th U.S. Army Group in World War II.

Chapter 1 presents a narrative record of events surrounding the 12th U.S. Army Group's precombat preparations for refugee and displaced persons operations. Subject areas included are the development of World War II civil affairs doctrine for military operations in Europe, the organization of civil affairs units and staffs, and the formulation of population control plans. Shortcomings, as compared with today's standards expressed in Department of the Army Field Manual 41-10: Civil Affairs Operations, dated 14 May 1962, are also incorporated.

Chapter II begins with the invasion of Normandy on 6 June 1944 and terminates just prior to the execution of breakout operations from the beachhead, a maneuver initiated on 2 August 1944. A period of successful refugee and displaced persons operations is described despite the deficiencies recorded earlier during the pre-invasion planning period. Factors contributing to the effectiveness of these initial operations are the major subject areas of interest. Also included is a discussion of a potentially disastrous civilian movement control problem. This situation began to form as a result of a serious shortage of French police personnel and the lack of a functioning civil judicial system.

Chapter III commences on 2 August 1944. It contains an account of refugee operations during the 12th U.S. Army Group's advance to the Seine River, a tactical operation ending on 26 August 1944. Civil affairs activities during this period were marked by differences resulting from a variance in the tactical maneuvers of the two field armies subordinate to Headquarters, 12th U.S. Army Group. The 3d U.S. Army moved rapidly through areas of France where war damage to civilian facilities was minor. In contrast, the 1st U.S. Army proceeded at a comparatively slower rate through heavily damaged French cities and towns. While similar procedures were implemented in each army's area, entirely different results were achieved. Moreover, most difficulties were centered in the 1st U.S. Army's zone of operations. The effects of these different combat situations on refugee activities constitute a major part of this chapter. A second feature is the description of an effective civilian movement control system predicated almost exclusively on extensive French support.

Chapter IV portrays the refugee and displaced persons experiences of the 12th U.S. Army Group during its advance to and subsequent operations along the western German frontier. Tactical operations transpiring include static operations from August through early December of 1944 and a period of retrograde operations resulting from the mid-December German counterattack through the Ardennes.

During the static phase, thousands of refugees and significant numbers of displaced persons were encountered by the 12th U.S. Army Group. Serious complications developed particularly concerning the latter category of civilian personnel. Descriptions are given of these problem areas which included simultaneous operations in France, Belgium, and Luxembourg; the political aspects inherent in displaced persons confrontations; the existence of politically oriented resistance groups in Belgium; and a continuing lack of effective civil police support in Belgium and Luxembourg.

In the retrograde phase which followed, a story of confusion and the relative ineffectiveness of higher military command headquarters to provide solutions for a rapidly developing refugee problem is cited. By necessity, this situation was resolved by the actions of tactical commanders and civil affairs units at the lower echelons. The results of these many uncoordinated individual actions and the role played by the civilian governmental agencies of the three nations concerned are the main features of this last section of Chapter IV.

Inferences have been drawn in Chapter V as to the adequacy of current doctrine in the World War II situations. The validity of such inferences for the future depends, in part, on the extent to which future circumstances approximate the World War II conditions, a matter outside the scope of this thesis. Nevertheless, some lessons, clear from the 12th U.S. Army Group's experiences of 1944 and 1945, seem so basic as to prevail in future military operations of any sort. A discussion of these considerations is included in the last chapter of the thesis.

The value of this thesis is centered in two areas. It provides a historical record of the 12th U.S. Army Group's refugee and displaced persons operational methods and problem areas to include support furnished by recently liberated Allied governments. It also verifies many procedures described for current operations. Admittedly, the value of this study provides guidelines concerning support which may be received from civilian governments under conditions closely related to those found by a major military headquarters in World War II.

30. MANUAL WAR GAMING; HAND PLAYING THE DIVISION BATTLE, by Major Jonathan L. Holman, Jr., USA, 196 p.

Cursory study of war gaming quickly reveals that one of its central problems is the conflict between the requirement of realism in play and the need for rapid and simple assessment techniques. This thesis investigates war gaming methodologies with the purpose of providing new techniques that will increase realism, speed up and simplify assessment, or do both.

Chapter I provides the background necessary to understand the breadth of the problem. Chapter II discusses some modern games and methodologies from which ideas for new techniques may be originated or synthesized. Together these chapters develop the basis for limiting the scope of research to new techniques that will improve the division level manually played training game.

The first proposal, which is intended to increase realism, is discussed in Chapter III. This proposal takes the time-honored method of force firepower audit, one ingredient of combat power, and describes a method that both tailors firepower to the makeup of maneuver battalion task forces and dimensionally allows an incremental buildup in firepower as opposing forces close in battle. This is accomplished by using a graphic aid called a "tote board" which contains a "distance between opposing forces scale" and a vertical column of acetate sleeves. The sleeves house maneuver company "firepower cards". These, when read in column at a specific "distance between opposing forces," yield a firepower "raw" score that a battalion task force, composed of the companies represented by the cards, would have at that specified range from the enemy. In Chapter IV, a technique of modifying this firepower "raw" score to account for the effects on firepower of such variables as attrition in unit strength is given. This technique does not vary from present methods of converting unit firepower into combat power. It simply provides a calculator similar to a circular slide rule that multiplies blue and red firepower, percentage strength, and frontage ratios together. This yields a "true" firepower ratio. This ratio, in turn modified by direction of attack and defender posture, yields the blue and red or attacker to defender combat power ratio. Further modification that accounts for attacker mobility and terrain difficulty provides attacker rate of advance. The calculator evolved through three models into the final prototype which is composed of a cardboard base disk and three successively smaller acetate disks. Logarithmic scales on the circumference of each disk provide the means for taking the ratios. A series of tables on the face of the base disk accounts for the other factors involved. Indices on the outer acetate disk provide automatic readout of proper combat power and rate of movement values after the multiplication has been accomplished. This graphic aid should speed up and simplify combat power and rate of movement assessment as it converts three separate steps of division and two of multiplication into a sequentially combined operation. It brings together in one place three separate tables and eliminates two steps of searching for tabular values.

The necessity for assessing rates of movement of deployed forces during a war game is complemented by the need for calculating the semitactical or administrative movement rates of reinforcing units or logistical columns. FM 101-10 (Part 1) provides a list of aids that simplify the required calculations. In Chapter V, a technique, alternate to those of the FM, that makes use of a circular calculator similar to that just discussed is proposed. This calculator, called The March Computor, has a base cardboard disk upon the face of which log scales are inscribed that represent distance and time distance, road space and time length of column, and number of vehicles in column. For daylight moves at a standard fifteen miles per hour or night moves at ten miles per hour, indices are provided on an outer acetate disk which, when brought opposite the march distance on the cardboard disk, provides a time

distance readout. The road space occupied by a column and the time length of a column are dependent on the number and spacing of vehicles in the column. By using the proper formula in the construction of the calculator and by providing an index that falls over a log scale representing the number of vehicles, arrow indicators that point out proper values of road space and time length may be inscribed on the outer acetate disk. This is the basis of construction of The March Computor. Its basic advantage over the aids described in FM 101-10 is that, by using a circular construction and log scales, problems that cover a greater range of values may be solved.

Chapter VI takes up war game casualty calculation. Lanchester's classic work on battlefield attrition and modern developments based on both his papers and other data are first discussed. It is shown that his equations are not presently useful in providing a method of casualty assessment for the divisional training war game. Rather a method of converting the daily divisional short term casualty statistics contained in FM 101-10 to hourly battalion task force loss rates is described. These hourly rates, which vary for the different types of actions given in the FM, are each one taken as a mean value on a normal or bell-shaped curve. A spread of possible hourly casualty rate values may be obtained from the curve if a proper standard deviation is first chosen. This is done and the possible range of values is then combined with random number theory by fitting the hourly casualty rate distribution to random number blocks. This provides the basis for construction of a circular calculator from which both attacker and defender casualty rates caused by the maneuver units themselves may be selected. It is called the Small Arms Casualty Calculator. In usage, a random number is selected from a table and matched to the type action block of random numbers on the calculator. The proper attacker casualty rate is read on the circumference of the calculator directly above the number selected. As in presently used methodologies, this rate is then multiplied by a proportion factor based on the combat power ratio between attacker and defender to give defender casualties. The advantage of this technique is that it introduces "chance" selection of casualties which, over a period of many assessments, should match the divisional experience data of FM 101-10. This matching of values would probably not occur after recurring small arms casualty assessment by present methods, which simply call for arbitrary selection of hourly rates of between one and three percent.

Present methods of artillery and airstrike casualty assessment in the Leavenworth game require volley-by-volley or pass-by-pass assessment based on tabular data. This is quite tedious if a number of battalion volleys or aircraft passes into an area must be measured. Cumulative casualties that would occur in an area bombarded by a successive number of battalion artillery volleys or aircraft passes may be graphed and transformed by a combination linear and polar plot onto a circular calculator. This is done in the development of an Artillery and Airstrike Calculator. In usage, all that is required is the selection of the casualty percentage inscribed above the proper intersection of a circular line representing number of volleys or number of passes and a graphic line representing cumulative casualty percentage. This casualty percentage represents total casualties among troops in

the area hit by the bombardment. To find unit casualty percentage, this figure is multiplied (using a log scale on the outer disk of the calculator) by the percentage of the unit's troop strength located in the affected area. This calculator is located on the back of the small arms calculator and together with it provides a new technique for assessing casualties caused by conventional fires. This technique is felt to be more realistic in the case of small arms assessment and faster in the case of artillery and airstrike assessment.

Chapter VII reviews these developments by discussing their relationship to the various elements of the divisional training war game. It then describes a test that was designed and conducted to ascertain that the graphic aids developed do in fact achieve the objectives of speeding up, simplifying, or adding realism to the divisional war game. Conclusions drawn from the test results are that the "tote board" and the Small Arms Casualty Calculator do increase realism; that fair assurance exists that the prototype Combat Power and Rate of Movement Calculator and the Artillery and Airstrike Casualty Calculator would simplify and speed up casualty assessment; and that the March Computor does provide an alternate method of computing march rates.

31. COMMAND AND CONTROL OF ORGANIC AVIATION IN U.S. ARMY DIVISIONS 1942 TO 1961, by Major P. W. McGurl, USA, 117 p.

The objective of this thesis is to provide the reader with a record of the most important developments in the evolution of doctrine for the command and control of organic divisional aviation between 1942 and 1961, and to provide a source of reference data for more detailed study of the subject. Throughout this paper the words "command" and "control" are used separately and should not be considered together as a term referring to a communication system for directing and controlling air activities.

In conducting research for this thesis, events were reviewed in chronological order as far as possible. The total period involved was divided into chapter-size parts which contained the significant developments of specific eras. Each major change in organization of the division and each important shift in the tactical situation during combat were examined to determine their effects on command and control techniques and procedures. The main source of reference material was the U.S. Army Command and General Staff College Library.

The material in this thesis is presented in chronological order. Since doctrine for employment of organic aviation was very similar in each type of division, emphasis is placed on infantry division employment doctrine. Major differences between the infantry division and other types of divisions are discussed briefly where they are of interest to the study.

When the second world war began, doctrine for employment of aviation in support of the Army called for the pooling of all aviation resources at higher levels under a theater or similar commander. Army divisions at that time did not contain aviation units, but in 1942 the War Department authorized small air observation sections in the division artillery of all divisions.

Initially both aircraft and pilots were in short supply, but by 1943 aircraft procurement had been increased and the Army Air Forces (AAF) and Army Ground Forces (AGF) had worked out a system for training pilots for artillery units.

The first experience with an artillery air observation section in the invasion of North Africa was quite disappointing because there had been no definite plan for the employment of the section. As the war progressed, techniques and procedures were worked out by air section leaders and their battery commanders. The battery commander provided personnel, administrative, and some logistical support for the section, but was not technically qualified to evaluate the operation of the section or the qualifications of its personnel. The chain of command went from the division commander to division artillery commander to artillery battalion commander to headquarters and headquarters battery commander, then to the air observation section leader. Most division artillery commanders realized the need for increased supervision of subordinate air observation sections, and control over the operation of these sections by the senior pilot in the division artillery headquarters battery was tightened. This was the first use of the centralized control concept. The Sicilian campaign saw this concept come into full bloom, and it was used extensively in all theaters of operation during the remainder of the war. In December 1943 the War Department added an artillery air officer position to the division artillery staff.

Sicily and Italy were the real proving grounds for the air observation section. Doctrine developed there was perfected and refined in other theaters during the remaining months of the war.

When forces were massed in England and plans were prepared for the assault across the channel, organic divisional aviation was integrated far more effectively than it had been in the invasion of North Africa and the results were excellent. From 1944 until the end of the war, centralized control was the normal method of operation in the European Theater of Operations.

In the Pacific, task-force-type organization for combat, available shipping, and the distance to the objective usually determined the air observation post organization for assault landing. Unlike operations in Europe, divisions frequently shifted from one method of control to another because of the nature of island hopping warfare.

After almost three years of experience with air observation sections in combat, relatively few changes had been made in the basic concepts. The most significant development during this period was that the assignment of air sections remained decentralized, while only control was frequently centralized by division artillery commanders.

In the years between World War II and Korea, two major changes occurred in the organization of aviation in Army divisions. The first of these changes in 1945 greatly increased the number of air sections and provided

an aviation staff section at division level. The second change, occurring in 1948, placed into the division headquarters company, all of the division's aircraft except those in division artillery. With the addition of liaison aircraft to infantry, armor, and cavalry units, officers from these branches were trained as liaison pilots along with artillery officers.

Evolution of doctrine for the command and control of organic aviation progressed very slowly in the late 1940's. In spite of significant changes in organization, the basic concepts worked out by the artillery for air observation sections were generally carried over and applied to the new air sections. In the supervision and control of air section activity, only three significant developments occurred during this period. They were the publication of specific guidance in FM 20-100, the gradual realization that increasing air traffic over the division zone would have to be controlled more closely, and the partial abandonment of the decentralized control concept in assignment of aircraft within the division.

In their eagerness to get the job done during the first few hectic weeks of combat in Korea, air sections frequently lost their identity because all aviation resources were employed under the control of the division aviation officer. In the Pusan perimeter, aviation missions increased and each division on line in Korea developed its own control techniques. Personnel and equipment remained assigned to the division headquarters company, the four artillery battalions, and division artillery headquarters, but in most cases assignment of air sections was not a major consideration in deciding on a method of control.

The first two divisions to use a form of centralized control in Korea were the 25th Infantry and the 1st Cavalry. Major advantages to centralized control were improved overall control, efficiency of operation, maximum utilization of resources, ease of maintenance and supply, equitable distribution of missions between pilots, improved local security, and minimum airfield requirements. The disadvantages to such a system were reduced responsiveness to artillery commanders, loss of direct contact between pilots and artillery firing units, and a separation of artillery air sections from their command headquarters.

In Korea, no serious problems developed in the control of Army air traffic over the division zone. As Army aviation was used to perform an increasing volume and variety of missions, a high degree of staff coordination was required to obtain maximum benefit from the employment of the division's aircraft.

Development of a tactical stalemate starting in November 1951 greatly relieved the only aviation situation within division. On 15 May 1952 new tables of organization and equipment (TOE's) were published which gave divisions many more aircraft. Assignment of these aircraft was decentralized at a time when most divisions were pooling their aircraft because of the tactical situation and improvements in aviation equipment.

Provisional aviation companies were organized in Korea in 1953, and the control of division aviation operations was streamlined. The division aviation officer, who was also the company commander, participated in the planning of division operations and was directly responsible for the effective employment of the aviation company. The company provided the solution for a number of perplexing problems, but, regardless of how efficiently it operated, aviation support was not as responsive to the needs of ground commanders as it had been and a measure of the personal contact and understanding between the pilot and the unit he was supporting was lost. To many commanders these were key issues.

When the Korean War ended, Army aviation was in a quandary. New organizations had been developed but not adequately tested, advances in aircraft design had not been fully exploited, the personnel situation had become more complicated, and there was very little agreement on how divisions could best command and control their aircraft. Unfortunately, command and control techniques and doctrine Army-wide had not kept pace with technological advances and experiences gained in Korea.

Starting in 1954, the Army organized, trained, and tested certain selected divisions under the "Atomic Test Field Army" (AFTA) concept. A combat aviation company was assigned to the division headquarters battalion of each test division. The normal chain of command ran from the division commander through the division headquarters battalion commander to the aviation company commander. The headquarters battalion commander exercised command (less operational control) over the aviation company. Operational control over the company was delegated to the division aviation officer.

Support was provided to elements of the division by either of two methods: (1) a flight group was attached to or placed in support of a specific unit, or (2) all aircraft not placed into one of the flight groups were utilized in general support of the entire division.

Training Text 1-100-1 published in 1954 described the first Army air traffic control system concept. In June of 1955 the aviation company became a separate company of the division headquarters troops, but after testing was concluded the Army did not adopt the ATFA concept.

In December of 1956 the Army started to reorganize its divisions with major emphasis on the problems of ground atomic war and due consideration to the evaluated experience of history and field tests. The organization of aviation was slightly different in each type of pentomic division; basic command and control doctrine was very similar.

The normal chain of command ran from the division commander through a division trains commander to the aviation company commander. When operational plans were prepared, the aviation officer was responsible for recommending the task organization of the aviation company. Elements of the Division not provided with a combat support flight or section obtained support

from the aviation company's rear echelon. Because of the magnitude of the division's organic aviation operation, effective control was quite difficult to maintain.

Air traffic control became increasingly complex during the pentomic evaluation period, and, through testing, the Army air traffic control system concept was found to be adequate to control air traffic for only a limited time.

New TOE's were published in 1959 and all divisions reorganized accordingly. The most important changes in organization of the infantry division's aviation under new TOE's were the assignment of the aviation company as a separate company directly under division headquarters and the addition of a third echelon aircraft maintenance capability to the division. The maintenance detachment normally lived with the aviation company but operated under the command and technical control of the transportation battalion commander. In the new divisions, with greater mission capabilities, staff coordination became even more important and effective control more essential. The most serious areas of difficulty encountered were size and complexity of the aviation company, relationship between the division aviation officer and aviation company commander, doctrine for the control of air traffic, control of the third echelon aircraft maintenance detachment, and a complex system of providing support to habitual users of aviation resources.

By 1961 the Army school system was providing well-trained personnel for division aviation companies, and Department of the Army policies pertaining to ground assignments for aviators were effective in orienting the aviation program closely to the needs of ground tactical commanders.

Looking back over the changes which occurred, it is apparent that the evolution of doctrine was accelerated during World War II and the Korean conflict and retarded during other periods. Firm doctrine on the control of Army air traffic over the division zone was never published. By far the greatest controversy involving organic division aviation had to do with the manner in which it was controlled. The "pros" and "cons" of centralized versus decentralized control are discussed in considerable detail in this paper.

By 1961 the Army had many more definite ideas about its division aviation than it had in 1942, and the experience gained over the years will be useful in developing doctrine for the employment of even greater organic aviation capabilities at division level in the future.

The writer hopes that information contained in this paper will in some way be of assistance in developing future doctrine for command and control of organic division aviation.

32. AN IMPROVED METHODOLOGY FOR SCREENING MILITARY PILOT APPLICANTS, by Captain Dwight V. Wilson, USAF, 92 p.

This thesis concentrates on the process of selecting men for military pilot training. Past, present, and possible future selection techniques are explored and analyzed. The objective is to determine how the present selection method can be improved so that the number of eliminations from pilot training and, consequently, the cost of military pilot training may be reduced. The paper is divided into three general areas:

History and Analysis of Selection Methods.--The methods which have been used to select men for military pilot training from 1908 to 1966 are reviewed and analyzed. Written and apparatus aptitude tests which were developed during World War II receive detailed analysis.

Investigation of Other Applicable Procedures.--Several procedures are explored which might improve the selection system if implemented. These include light plane training; the Flight Instruction Program; personal interviews; psychological, psychiatric, stress, and motivation testing.

Conclusions.--Four conclusions are evolved from investigation and analysis:

a. The written aptitude test should be retained.

b. Flight Instruction Program screening should be expanded to include applicants for pilot training from the U.S. Air Force Officer Training School and U.S. Navy Aviation Officer Candidate sources.

c. A modern apparatus test should be developed and included in selection testing to evaluate pilot potential.

d. A valid motivation test should be developed and implemented for inclusion in the battery of selection tests.

33. A HISTORY OF THE MISSIONS OF ARMY AVIATION PERFORMED IN SUPPORT OF THE FIELD ARMY, by Major Franklin L. Wilson, USA, 166 p.

In recent years Army Aviation has become an essential tactical and logistical tool for Army commanders. Army aircraft now support the land battle by performing a variety of missions throughout the combat zone, though commanders have not always enjoyed the magnitude of organic aviation support which is currently available. It is useful, therefore, to examine the missions which Army Aviation has performed in past years as a means of understanding how Army Aviation has come to have its present capabilities, and what further mission requirements may be desired.

The purpose of this thesis, therefore, is to trace the historical development of Army Aviation in terms of the missions it performs in support of the field army. Army Aviation is defined as "personnel, aircraft, and allied equipment organically assigned to Army organizations by appropriate

tables of organization and equipment, tables of distribution, tables of allowances, or other competent authority," and specifically, in this thesis, as those aircraft and aviation units which are organic to elements of a type field army. The field army is selected as the level of command for discussion because at this level of operation are found all of the Army Aviation units which have the basic mission of supporting Army combat operations.

In order to trace the evolution of missions performed by Army Aviation, this thesis is divided into chapters, each of which covers an event or period of time which had its own particular effect on Army Aviation. Since the mission capability of Army Aviation during any particular period of time was closely related to the type of aircraft available and to the manner in which aviation units were organized, each chapter includes a discussion of aircraft employed and aviation unit organization concurrent to the period of time being discussed. As an aid in evaluating the overall spectrum of missions performed by Army Aviation, a tabulation of the missions discussed within each time period (chapter) is included. To further aid in evaluating the effect of aircraft characteristics and capabilities on the mission capability of Army Aviation, a tabulation of characteristics of all aircraft discussed in the thesis is also included.

A consideration of the discussions of the evolution of Army Aviation's mission capability leads to a conclusion that the most important factor which has affected the growth of this capability has been the physical characteristics and capabilities of aircraft and aviation peculiar equipment available at any given point in time. From this conclusion, taken in view of the capabilities of the present family of Army aircraft, the author suggests that logical future developments in Army Aviation will include an expansion of two present capabilities, specifically the groups of missions categorized as aerial fire support and transportation.

Consideration of these discussions also leads to a conclusion that inconsistent departmental policy has also affected the growth of Army Aviation's mission capabilities. History shows that the greatest progress in Army Aviation has come about during periods of war. From this conclusion, the author suggests the prudence of recognizing that Army Aviation will perform its missions more effectively in war when modernization and expansion of mission capabilities are accomplished during peacetime, thus reaffirming the validity of the motto of the United States Army Command and General Staff College, "Ad Bellum Pace Parati" (Prepared in Peace for War).

34. THE ROLE OF OPERATIONS RESEARCH IN MILITARY DECISION-MAKING, by Major Richard Wm. Anson, USA, 149 p.

Today's military decisions are the result of the complex integration of resource factors and performance requirements organized within the framework of man-machine systems. Resource costs and performance requirements must be critically and objectively examined before the military decision-maker can present logical and justifiable recommendations to the higher levels of the defense establishment.

The purpose of this thesis is to provide the military decision-maker with an insight into one of the analytical and quantitative procedures used to develop alternative solutions to complex military problems. This procedure is known as operations research and addresses military problems involving doctrine, organization, and materiel. The use of operations research in the solution of military problems has been credited with the derivation of more objective decisions. This thesis serves to familiarize the military decision-maker with the terminology, background, and evolution of operations research; the nature and role of this analytical procedure; and its military applications to include specific techniques.

Operations research has emerged through the development of scientific methods in the fields of scientific management, human factors engineering, and other scientific disciplines. Operations research began as an organized activity in 1940 in Great Britain, where its growth was stimulated by problems of integrating radar into the aircraft early warning system of the country. From Great Britain, operations research was quickly taken up in the United States and applied to such problems as aircraft formations and convoy movements during World War II.

In the years following World War II, the further growth of operations research has been phenomenal, as evidenced by the increasing number of industrial organizations and other groups specializing in the application of operations research to both industrial and military problems.

While there has been no widespread, acceptable definition of operations research, it has been characterized in terms of the following significant attributes:

1. Operations research addresses high-level problems. The results of analysis of these problems are provided to high-level management where the authority exists to implement the solutions developed.

2. Operations research employs the "team" approach which includes representatives of those scientific disciplines who can make a contribution to the solution of the problem.

3. Operations research employs the "scientific method" and is a phased approach from problem identification to the presentation of alternative solutions to the decision-maker.

4. Operations research is directed toward both the operational problems of today and the conceptual problems of tomorrow.

5. Operations research attempts to develop an optimal decision, solution, policy, or design.

6. Operations research is oriented toward the employment of techniques, previously proven, tailored to fit the problem.

7. Operations research employs the mathematical approach to problem solving through the use of models.

The prominence of mathematical models in operations research methodology has been a prime factor in the success of operations research. Some of the outstanding successes have been achieved through the development and utilization of mathematical tools. These tools include replacement theory, queueing theory, linear programming, and game theory, as well as many others. While these tools are discussed in this thesis, it is not intended to transform the military decision-maker into an operations analyst. An appreciation of these tools by the decision-maker is necessary, however, in order to illustrate approaches to problems which may assist him in objectively structuring problems he may encounter for subsequent analytical examination by an analyst. Familiarity with these tools has the tendency to reduce the reluctance sometimes evidenced by the military decision-maker to include such quantitative procedures as supporting justification to his decisions and recommendations.

Since the end of World War II, the acquisition of military forces and their equipment has required a careful consideration of all aspects associated with the selections of organizations, particularly in the light of greater peacetime demands placed on the national income for defense purposes. The long-standing tendency to state military requirements in absolute terms without reference to their costs has been modified by the realization that the military effectiveness or military worth of any given weapon system or organization cannot be considered in isolation. The derivation of organizational effectiveness must be the result of an integrated consideration and determination of both military effectiveness and cost-effectiveness associated with various alternatives to be considered by the military decision-maker. These two considerations, military effectiveness and cost-effectiveness, serve as criteria in selecting the best alternative to achieve a particular required result. Such decisions can be properly made only when the costs and military effectiveness of the various alternatives are presented in the most objective manner possible.

Operations research can provide a logical, structured, systematic procedure for comparatively analyzing organizational effectiveness in support of a specific military concept. The total "system" is examined. That is, all aspects of each military organization considered, models are developed and employed, both for military effectiveness and cost-effectiveness. The "best" solution to the problem is sought. That is, the best organization, of those being considered, is identified. Yet, the results of the total analysis are presented to the military decision-maker in such a way, through the ranking of alternatives, that the final selection of the desired organization is completely in his hands. This is as it should be, but the final organizational selection by the decision-maker, using the decision matrix, is supported by facts and data. It is not the result of subjective rationalization. It is this objectivity and quantitative support given the decision-maker in his problem-solving role that is the hallmark of operations research.

The main obstacle to the wider use of operations research and quantitative decision-making is the lack of adequate value systems. Frequently the decision-maker must develop his own value system to fit the problem under study, as seldom will an appropriate ready-made value system be available. In this day and age, with the requirements imposed by the higher echelons of the defense establishment to validate and quantitatively justify military recommendations, this difficult problem must be addressed. The alternative to avoiding the problem of value measurement is to venture into the world of intangibles and their measurement. It is in this world that the decision-maker must exercise extreme caution.

While alternative solutions to problems presented by the operations analyst to the decision-maker may appear inviting, analytically rigorous, and mathematically correct, a close and detailed examination of both the assumptions and the value system used by the analyst is essential. If the decision-maker fails in this responsibility the most exhaustive, detailed, comprehensive, and mathematically valid study can be destroyed and reduced to nonsense upon the discovery of the incorrect assignment of value measurements to alternative courses of action.

However, in this complex age of sophisticated military organizations and weapons systems, operations research is firmly established as a valuable and almost indispensable aid to the military decision-maker. It is the military decision-maker who must understand, accept, and use this quantitative assistance. Subjective analysis cannot stand alone, and in the final analysis, there is no subscitute for quantitative decision-making.

35. AN ANALYSIS OF THE CURRENT CONCEPT FOR EMPLOYMENT OF THE AIRMOBILE DIVISION AGAINST INSURGENT FORCES IN AN UNDERDEVELOPED AREA, by Major Leon D. Bieri, USA, 209 p.

The commitment of the 1st Cavalry Division (Airmobile) to the insurgent war in South Vietnam in July of 1965 provided an opportunity to determine if the concepts developed in training and testing were valid in the environment and against the enemy of that country. Concurrent with the modifications being made to these concepts as a result of combat operations, this thesis is an academic attempt to analyze the air assault concept.

Organized along lines paralleling the ROAD infantry division, the airmobile division has certain modifications to give it a large scale airmobile capability. There are eight infantry battalions, six of which may be supported at any one time by an assault helicopter company (twenty UH-1D helicopters) that gives them a capability to maneuver rifle companies rapidly about the battlefield. Medium and heavy artillery are supplanted by aerial rocket artillery and increased reliance on close air support. Parallel radio nets over three modes (FM, AM-SSB, and UHF) permit superior communications. Three air cavalry troops, pathfinders, reconnaissance platoons, normal infantry patrols, an aerial surveillance platoon, and heliborne commanders permit extensive aerial and ground reconnaissance. In balance, the airmobile division is vulnerable to air defensive fires and sensitive to adverse weather conditions. Near perfect teamwork is required to maintain the tempo inherent in airmobile operations. Great dependence is placed on timely and accurate intelligence in support of offensive operations and to protect airmobile task forces from hazardous situations.

South Vietnam is an environment hostile to the airmobile division. Rugged, forested mountains restrict landing zones and provide cover and concealment for the enemy; however, the flat and cultivated river plains offer flexibility in selecting landing zones and favor aerial observation. Coastal swamps afford the enemy defensible bases. Although aviation operations are possible at some time in nearly every day, seasonal periods of local fog, rain, and low clouds affect airmobile operations and close air support. The climate is debilitating to personnel and causes equipment deterioration. Caught in a generation of war, the native people are influenced by propaganda and terrorism to support and be the "eyes" of the insurgents. These obstacles can be overcome, but their effect is to reduce the combat power of the airmobile division and to make airmobile operations more difficult.

The tactics of insurgent forces are based on their numerically inferior strength which forces them to seek every advantage of geography and to avoid all battles except those in which their local superiority will permit a quick victory. Insurgent doctrine describes the struggle in Vietnam as mobile warfare, a condition of war analogous to guerrilla warfare but fought by battalion size and larger forces. The theory is simply "to fight when you can win and run when you cannot." Insurgent forces--inured to hardship, foot mobile, employing automatic weapons, mortars, and artillery, and making expert use of terrain--have significant combat power and pose a meaningful challenge to an airmobile task force seeking to locate and destroy them.

Airmobile operations offer opportunities for speed, flexibility, surprise, and exercise of initiative in battle; at the same time they demand superior intelligence and special consideration for security. The air assault concept places full emphasis on the offensive capabilities of the airmobile division, occasionally without regard for its limitations. Analysis of this concept in light of the capabilities and limitations of the airmobile division, characteristics of the area of operations, and strengths and weaknesses of the enemy reveals certain deficiencies. To overcome these deficiencies a modified concept is proposed.

The proposed concept requires that forces be essentially massed--employed in airmobile task forces of brigade and battalion size. Heavy reliance is placed on ground reconnaissance and indigenous sources. Airmobile forces endeavor to restrict the maneuver of a located insurgent force by fire and maneuver, seeking unopposed landings. Finally, the insurgent is destroyed by a coordinated ground attack to destroy or capture him.

Other levels of insurgent conflict and areas of the world are considered, and it is concluded that the proposed concept is generally applicable to airmobile operations against insurgent forces in other underdeveloped areas of the world. The airmobile division has a significant combat power advantage that, if intelligently employed, can bring victory in every battle. The concept which has emerged in this thesis is proposed for that purpose.

36. TOWED VERSUS SELF-PROPELLED ARTILLERY IN THE PERIOD PRIOR TO 1955: AN HISTORICAL INVESTIGATION OF THE ARGUMENT IN THE UNITED STATES ARMY, by Major A. C. Bole, Jr., USA,

Field artillery must move rapidly as well as shoot accurately in order to do its job. An important argument as to the best way to move cannon has been, and still is, the argument of towed versus self-propelled artillery. The purpose of this paper is to chronicle and analyze this argument in the U.S. Army prior to 1955.

Chapter I describes the development of the materiel for mechanized artillery transport from 1916 to 1955. During this period there was very little change in the materiels and technology used for the development of artillery vehicles and cannon. As a result, there was very little equipment to consider for the proponents of either towed or self-propelled artillery.

Chapter II recounts the history of the argument from its beginning until the United States' entry into World War II. The argument prior to World War II divides into two phases: 1919-1927 and 1928-1941, with the creation of the first U.S. Army armored forces being the divider. During the first phase, rapid occupation of position was considered the chief advantage of self-propelled artillery, and lighter unit weight the chief advantage of towed artillery. By the end of the second phase, self-propelled artillery was considered almost exclusively for armored divisions, and towed artillery for infantry divisions.

Chapter III describes the experience of World War II with respect to artillery transport. During the war virtually all armored division artillery was self-propelled, and infantry division artillery was towed. The consensus was that self-propelled artillery was better for armored divisions.

Chapter IV discusses the period from after the war until 1955. For the most part, the post-war analysis continued in the same vein as the experience of the war: self-propelled artillery for armored divisions and towed artillery for infantry divisions. The Korean conflict emphasized advantages of self-propelled artillery in protecting itself from ground attack. The chapter ends with descriptions of new concepts for self-propelled artillery, based on new technology.

Chapter V summarizes, analyzes, and concludes. The argument has changed very little during the period covered in this paper because the materiel had changed very little. The analysis shows that, of the many reasons cited in the argument, only self-propelled artillery's advantage of rapid occupation of position and its disadvantage of heavy weight were significant reasons. The chapter concludes that by 1955 there was not a preponderance of opinion for either towed or self-propelled artillery exclusively, which was quite proper, as there were many improvements to be made to both forms of artillery transport. In order to obtain these improvements by the best use of technology, soldiers must establish characteristics desired in materiel and must require industry to meet these characteristics.

37. A PROPOSED DOCTRINE FOR THE ATTACK OF A BUILT-UP AREA BY A ROAD DIVISION, by Major Wade Hampton, USA, 115 p.

This study has a twofold objective: first, to evaluate the adequacy of current U.S. Army doctrine for the attack of a built-up area by a ROAD division; second, in those cases where the present doctrine is found either inadequate or lacking, to develop appropriate doctrine.

The evaluation is based on the historical experiences of combat in cities during World War II. The first three chapters are studies of eight different cities in which combat took place, with the majority of the account devoted to the seizure of Brest, France.

The last two chapters compare present doctrine with the problems and techniques derived from the historical experiences, and develop doctrine in those areas found lacking.

The study found five areas that were either inadequately covered or not covered at all in present doctrine. They were:

1. A surprise thrust to the center of a city's defenses using the flexibility inherent in the ROAD division offers to the alert commander a great opportunity to quickly seize a built-up area. Historically, commanders that employed a surprise thrust were successful in seizing a city before it could be adequately defended.

2. Encirclement is the key to the successful capture of a built-up area. Commanders should attempt to envelop a city as soon as possible. In those cases where physical encirclement is impossible due to obstacles or manpower requirements, either a reconnaissance screen or artillery interdiction screen should be established to deprive the enemy free access to the built-up area.

3. Infiltration is an important means of tactical maneuver in a built-up area. This method of attack offers the commander the opportunity to take critical objectives with a minimum loss of personnel. Correct execution requires well trained troops and aggressive junior leaders.

4. The intelligence effort plays an important role in the planning for an attack of a built-up area. This study found that many commanders were not aware of the enemy's city defense plan. In the case of Brest, France, commanders found that the tactics employed at the beginning of the siege had to be changed before the capture of the city. This was due primarily to a lack of intelligence appreciation on the part of commanders and principal staff officers. Current doctrine still does not place the required emphasis on this problem area.

5. The commander should consider two factors before selecting the formation for the attack. He must first allocate forces of sufficient strength to maintain pressure around the entire perimeter to prevent the enemy from shifting forces to the main attack area. He must then employ maximum firepower and forces at the selected point to rupture the enemy positions in multiple penetrations. The formation employed must have the majority of the combat force forward with a small mobile reserve positioned close behind the attacking elements.

It was definitely determined that the ROAD division augmented with special assault equipment, engineers, and artillery can perform effectively in a combat in cities environment.

38. REQUIREMENTS OF A GROUND TO AIR MARKING SYSTEM, by Lieutenant Colonel Charles D. W. Canham, II, USA, 78 p.

The purposes of this thesis are as follows:

(1) To determine the requirements of a visual ground to air marking system for use by ground combat or patrol type units in a counterinsurgency environment.

(2) To report the results of an experiment designed to give the answers to the problem above and conducted as a part of the graduate program of the United States Army Command and General Staff College.

(3) To make recommendations as to a possible way to get workable effective ground to air marking systems in the United States Army inventory.

Chapter I presents the background of the problem to include the historical precedence, the author's personal involvement in the problem, and some references to the Army's test of the air mobility concept.

Chapter II contains the experiment design, which includes the logic behind the approach taken to solve this problem. The model construct consisting of the interaction of six variables is explained. These variables are the five systems tested (smoke, panels, red cross marker, pyrotechnics, and a balloon system), the flight altitude of the observer aircraft, three types of landforms used (flat, rolling, and hilly), three types of ground cover (grass, bushes or trees not forming a continuous canopy, and continuous canopy), the location of the principal light source with regard to the ground site location, and the visibility.

Two sets of criteria are described. The first, the preliminary criteria, are ones against which the five systems are assessed prior to the actual use of the system in the field. These are weight, cube, reusability, self-sterilization, persistency, coding capability, and covertness. The second set are those measures of effectiveness which deal directly with the use of the system in the field, e.g., versatility and visibility.

Chapter III contains the description of how the experiment was conducted, to include a detailed description of the nine experiment sites used, the five systems tested as a part of the experiment, the scientific standards used, and a summary of the test series. The test series consisted of a total of 696 possible observations, to include 168 each of smoke, panel, and red cross marker and 96 each of pyrotechnics and the balloon system.

Chapter IV presents the reduced data from the field portion of the experiment. Included are details on each of the five systems tested with examinations of the critical variables which influence the success or failure of the system. The evaluations include the effect of landforms, ground cover, flight altitude, and direction of flight. These evaluations show that against the versatility criteria, only two systems, pyrotechnics and the balloon are satisfactory. Considering the visibility criteria, the balloon was 76 percent effective, the pyrotechnics 69.8 percent, smoke 59 percent, panel 39.8 percent, and the red cross marker 31.5 percent.

Chapter V contains the findings, conclusions, and recommendations derived from the evaluation of the experiment results and the performance of the five systems.

The conclusions drawn from the results of this experiment are:

(1) It is possible to apply a systematic approach to the solution of a problem such as the one which is the subject of this experiment.

(2) There is not presently in the inventory of visual ground to air marking systems a satisfactorily universal system or device, e.g., one that will assure a high degree of success in the various and varied environments in which it must be used.

(3) To be effective for airplanes flying over various types of terrain and ground cover, a system must get above the surrounding cover and should have sufficient persistency to remain there as long as necessary.

(4) The ground emplaced systems tested in this experiment were much more effective when viewed from 2,000 feet than at nap of the earth altitudes.

(5) Of those standard representative systems tested, none provided both the long-range observation capability necessary to get the aircraft to the general location and the pinpoint accuracy capability to get it to the exact location.

(6) A system which will work when emplaced on a parade ground will not necessarily work in the other eight basic types of combinations of landform and cover in which it should be able to work.

39. THE EVOLUTION OF THE G4 FUNCTION AT DIVISION LEVEL: 1921-1945, by Major Alvin C. Ellis, USA, 208 p.

This thesis describes the evolution of the G4 function at division level during the period 1921 through 1945. It begins with a brief description of the U.S. Army general staff and is followed by an examination of the staff organization and system of supply used by the divisions during World War I. These two areas provide the background material necessary for subsequent discussion of the division G4 during the periods 1921 through 1939 and 1940 through 1945.

Throughout each period the evolution of the G4 function is described in terms of organization, duties and responsibilities, command and staff relationships, administrative procedures, and the system of supply. This methodology allowed for a systematic treatment of the overall mission of the G4, the resources available to accomplish the mission, and the methods and techniques used in planning and operating combat service support within the division.

An examination of available material relevant to the study demonstrated the significant role of the Command and General Staff School (now the U.S. Army Command and General Staff College) in training commanders and general staff officers since 1903. The influence of the school was evident not only during World War I and World War II but throughout the interim war period.

The authorization of the division G4 in 1921 was a direct result of the recommendations of the Superior Board that was convened in 1919 by General Pershing to determine the lessons learned from World War I. The recommendations of this board resulted in the subsequent adoption of many other innovations and improvements in both staff organization and operational concepts throughout the Army.

During the period covered in this study, the G4 officer at division level was the last general staff officer to be authorized by tables of organization for the Army divisions. The principal duty of this officer and his section, during periods of both peace and war, was to plan, coordinate, and supervise logistical functions within the division.

The original organization of the G4 section in 1921 consisted of four officers and four enlisted men. Although the G4 general staff section at corps and army levels was organized along functional lines, the lack of sufficient personnel at division level precluded such a precise organizational structure. By 1937 and extending into the World War II period, the overall strength of the section had been reduced to two officers and three enlisted men. This reduction was attributed to the gradual enlargement of technical service units within the division and a corresponding decline in the total administrative workload of the G4. Although the reduction of personnel assigned to the section did not affect peacetime operations, it did prove inadequate during World War II. Accordingly, additional personnel were assigned, and by 1945 the G4 section had been increased to four officers and four enlisted men.

The duties and responsibilities of the division G4 increased steadily during the period covered by the study. All of his responsibilities gradually became identified within the functional areas of supply, evacuation and hospitalization, transportation, services, and a miscellaneous category to include the preparation of estimates, orders, and other tasks not readily identified within a functional area. It was shown that during the war the G4, more than any other general staff officer, frequently issued instructions within his area of interest to both staff officers and troops. Moreover, the G4, as opposed to his doctrinal role of planning, supervising, and coordinating, was both a planner and an operator. Numerous examples were

cited to substantiate this fact. The operation of traffic control headquarters and the initial operation of shore support installations during amphibious operations are but two of many examples noted. A study of division G4 operations during World War II indicated general agreement between the teachings of The Command and General Staff School and the manner in which logistical plans and operations were accomplished in the field. The exceptions noted were based more on problems generated by unusual situations than on changes in basic doctrine and principles. In fact, the only ingredients mentioned as additional requirements to successfully discharge the G4 duties were common sense, imagination, ingenuity, and flexibility.

The relationship of the G4 to other general and special staff officers during the period of the study can be summed up in one word--coordination. The G4 coordinated with other general and special staff officers to accomplish his responsibilities as the principal logistical advisor to the division commander and as the coordinating officer for the planning and supervision of division level logistics. The introduction of the G4 to the general staff at division level did not alter the basic precepts of command and staff relationships. He was an assistant to the commander and performed those duties delegated to him by the commander.

Based on analysis of the material presented, five basic conclusions were reached. These conclusions are:

1. The G4 section was organized as a result of lessons learned during World War I.

2. The duties of the G4 were increased steadily during the period 1921 through 1945.

3. The G4 section required additional personnel on a permanent basis during World War II and further required an augmentation during the planning and execution of special operations.

4. The G4 functioned as the chief supply planner and coordinating staff officer for the division.

5. The G4 generally followed published doctrine and the teachings of The Command and General Staff School. Any deviations from published doctrine or college instruction were based on isolated expediencies to meet specific situations.

40. A DOCTRINE FOR THE EMPLOYMENT OF CHAPLAINS IN THE FIELD ARMY, by Major William L. Fosmire, USA, 110 p.

This study has concerned itself with the employment and utilization of chaplains in the field army under combat conditions. It has specifically included the brigades of the infantry, armored, and mechanized divisions; the corps; the corps support brigades; the field army support command (FASCOM); and the field army.

In order to show the growth of professional supervision and the trend toward the present theory, an analysis of the historical evolution of the employment of chaplains was conducted.

The results of several study groups from World War II and the Korean War were studied in order to evolve an appropriate doctrine. The combat and after-action reports of unit chaplains during World War II and the Korean War were analyzed for this thesis. An examination of the new organizations, such as the corps support brigade and the field army support command, was conducted in order to see what contribution these organizations could make to the new doctrine.

The capabilities of the proposed doctrine were studied in comparison to the doctrine as it now exists. The present and proposed doctrines of chaplain employment and utilization were tested in a hypothetical situation within the framework of a type field army in a large land mass. Similar circumstances were used in both situations. At the conclusion of this test a comparison of the apparent strengths and weaknesses of both doctrines were discussed.

The employment of chaplains and the supervision of their activities have progressed from the concept of autonomous regimental control of chaplains to the present idea of at least partial control of chaplains. The present doctrine of employment and utilization of chaplains provides for virtually a permissive system of chaplain control. It is limited in that senior chaplains of the divisions and higher have little or no authority to direct the activities of subordinate unit chaplains and have no access to a chaplain reserve. While responsible for the religious activities and chaplain coverage for the command, the staff chaplain has no resources to fulfill this responsibility.

The only place where control by a staff chaplain is permitted as a routine matter is in the reassignment of chaplains within the brigade. The brigade staff chaplain of the three types of divisions assigns duties and responsibilities to the three brigade chaplains. With the concurrency of the commander, he places chaplains with appropriate battalions, moves them when necessary, and assigns responsibilities for area coverage of nearby units as needed. The brigade staff chaplain has operational control of the assistant brigade chaplains. This gives him some authority commensurate with the responsibility for the religious activities of the brigade.

Under the present doctrine the division chaplain can influence the initial assignment of chaplains in the division and can obtain, with the commander's consent, the transfer of unit chaplains. However, except under emergency conditions, he does not have directional or operational control of subordinate unit chaplains. The only exception to this is his control over the assistant division chaplain. Temporary control of the division chaplain personnel is granted the division chaplain only under certain emergency conditions and with the commander's consent. It is at this point that the present doctrine of employment and utilization of chaplains in the division terminates. His authority is limited to his persuasive powers only. The

doctrine as it is developed provides for the division chaplain to have operational control of chaplains in the division. The doctrine will require that the corps chaplain provide sufficient chaplains to the division chaplain to maintain an effective level of chaplain coverage.

The corps chaplain has long been a neglected position in the system of chaplain supervision. He has little control over chaplains attached to corps. The corps chaplain is in a position to see the total chaplain picture of the corps units. As he is aware of the corps operations and missions, he could assess the total requirements of all attached divisions and provide the necessary chaplains to meet critical situations in any or all of the attached divisions. In this capacity he could greatly assist the division chaplain in his work. In the case of need he should be able to create a task force of chaplain reserves to be a decisive addition to the situation. The corps chaplain, closer to the situation than the army chaplain, would be the level upon which the proposed doctrine would revolve. No longer would the division chaplain have to go vast distances in space and time to the field army chaplain. Under the present doctrine, however, the corps chaplain is permitted only to advise the division chaplain informally. In reality the corps chaplain has less control and influence of chaplains in subordinate units than does the division chaplain.

To create and facilitate the resources which should be available for employment of chaplains in the combat area, it is necessary to turn to the field army support command (FASCOM), particularly to the corps support brigade. At present the doctrine within the FASCOM states that FASCOM chaplains are not responsible for provision of chaplain services outside their own organization. The proposed doctrine will require that the support brigades of the FASCOM have sufficient chaplains to provide a reserve of chaplains who can be attached to the corps chaplain's section and then further attached to the division. The "chaplain reserve," when not employed with the division, would be used by the support brigades and FASCOM to provide area and denominational coverage within the corps area and the field army service area. This procedure modifies the chaplain team concept which was developed for use in the communications zone for area coverage.

Under the proposed theory a chaplain reserve is maintained for the combat units and is flexible so as to permit its employment anywhere in the corps or support brigade. It is neither too close to the division as to preclude its employment elsewhere in the corps nor too far from the action as to be unresponsive to the emergency needs of the division in combat. The field army chaplain, in conjunction with the FASCOM, would monitor the entire program. In this way he could be more confident that the entire field army was receiving proper religious coverage. Although chaplain shortages will not be completely eliminated by the proposed doctrine, the shortages will be placed in units and organizations that are not at present engaged in combat.

This study recommends that chaplain operational control should be extended throughout the field army. Such operational control, with appropriate supplemental chaplains available, would provide chaplain reserves where needed and when needed. Such a doctrine would insure adequate, timely, and in depth chaplain coverage in the field army.

41. THE MINUTE MEN, by Major John R. Galvin, USA, 112 p.

The patriot farmers shouldered their fowling pieces or muskets, and flocked to Boston; and soon General Gage's little garrison of British regulars was beseiged by a motley collection of rebels.

--Matthew Forney Steele, American Campaigns, Vol. 1, p. 24.

Nothing can be more certain, in the story of the beginning of the Revolution, than the spontaneity of the provincial call to arms.

--Allen French, First Year of the American Revolution, p. 22.

Such statements as these are representative of the common historical analysis of the minute men, a view which, if not completely incorrect, is at least inaccurate. The first battle of the American Revolution (at Lexington and Concord on 19 April 1775) was not a spontaneous uprising of loosely-organized local "embattled farmers"; it was the final clash of arms of the old Massachusetts militia, in which 49 regiments, containing over 14,000 men, marched against the British regulars (4000 men from 14 regiments actually struck the column), employing organizational concepts and methods of command and control which had been adopted and refined over a century and a half of nearly constant warfare. In the progressive transition of this fighting force from a crude miniature replica of Elizabethan militias to a state of near-completion as a powerful army, three major factors can be isolated as not only contributory to a very important degree but also quite unique:

1. The militia organization, though strongly based on the English Muster Law of 1572 and later regulations, was continually revamped by the superimposition of requirements such as the levy system for the provisional expeditionary forces and the concept of alert and rapid response by a designated portion of the regiment; the combination of these and other requirements produced several precursors of the minute man-militia structure of 1774, among these the snow shoe men of 1702-1743 and the picket guards of 1755.

2. The system of command and control also quickly departed from English tradition under the new pressures of the North American military and political situation and continually evidenced a realistic evaluation of the possibilities and limits in areas such as ordnance, supply, intelligence, training, and personnel administration.

3. The individual towns of the province, from the earliest days, provided a degree of discipline and an environment of cooperation which would have been impossible except in the political, social, and spiritual atmosphere under which these communities chose to live. The close association of these towns and the influence of the town meetings, the clergy, and later the newspapers created

a matrix in which the cooperative spirit of the province was nurtured; thus when the Committees of Correspondence were created in 1773, they had a profound effect, galvanizing the province into the collective action that created the minute men.

In view of the persistent and nearly universal reluctance of able historians to see the battle which opened the Revolution as more than a farmers' uprising, or at best the ragged but surprisingly effective response of an unorganized and leaderless bumpkin militia, it is not hard to sympathize with the bullet-ridden ghosts of redcoat grenadiers and light infantry who (the legends tell us) still walk the old road to Lexington and Concord, lost in dumfounded amazement.

Much of the research for this thesis was effected through the assistance of the interlibrary loan and acquisition desks of the College Library, making available photostatic copies of papers in the manuscript collections of the Massachusetts State House Archives. The published records of the State of Massachusetts contain only the final decisions of the legislative bodies, but a far more detailed story of the problems and decisions in the years before the Revolution. A second and somewhat dubious source yielded a surprising amount of information: the individual town histories, noted for their inaccuracies and biases, proved to be an excellent supplement to the town records and the state archives. The local historians, with their penchants for anecdote, legend, and local color, invariably provided accurate data to the student reading between the lines, looking for small pieces missing from the puzzle.

42. THE EVOLUTION OF THE COMMUNIST THEORY OF INSURGENCY WITH SPECIAL ATTENTION TO SOUTHEAST ASIA, FROM 1945 TO 1966, by Major Bertrand A. Handwork, Jr., USA, 126 p.

Our opponents in the Cold War, the Communists, have adopted a new form of warfare. This new tactic may be referred to as revolutionary warfare, insurgency, or guerrilla warfare. Yet, it is not the traditional form of guerrilla warfare as historians have described it.

Traditional guerrilla warfare involved primarily military actions and was essentially defensive in nature. It placed great stress on the irregular, or non-professional, who took up arms only after the regular forces had failed. Normally, personnel and resources were native to the country involved and no outside sponsoring power existed. The goal was the preservation or restoration of the indigenous regime.

By contrast, the Communist concept is primarily offensive. It involves the use of professional revolutionaries, outside support, and an interlocking system of actions--political, economic, and psychological, as well as military. The goal, is the overthrow of the existing government and its ultimate replacement by a Communist regime.

A body of theory has emerged which systematizes the techniques of using this new form of warfare--in five stages--to seize national power and advance the international policies of the Communists. However, there is some question as to precisely what constitutes this body of theory, that is, the Communist doctrine of insurgency. In order to understand this doctrine as the Communists themselves see it, we must examine in detail the writings of major Communist theoreticians.

Karl Marx, the self-proclaimed father of scientific socialism, preached the use of revolution as the means of overcoming social and economic injustice. He saw the answer to world problems in what we know today as communism and proclaimed that force and violence were necessary to install this new political philosophy. In arriving at his theories, Marx alleged that history proceeded according to set laws and toward inevitable goals. As a result of this mechanistic viewpoint, he never formulated any specific strategy for Communist world conquest. Marx, then, evolved a theory of history, social organization, and government, believed in revolution through force and violence, but, failed to make any real contribution to the theory of insurgency.

Vladimir Lenin, an activist as well as a theoretician, conceived and carried out the plan for revolution which made possible the establishment of a Communist government in Russia. Lenin's doctrine called for direct action to achieve reform, the use of professional revolutionaries and a revolutionary army to spearhead the necessary revolt, and, finally, the need for the Communist Party to furnish leadership and direction. In developing this doctrine, Lenin stressed the need for secrecy, detailed planning, propaganda, agitation, and the use of front organizations. He also laid the foundation for the exportation of revolution to other countries, through the formation of the Comintern (Third International), and focused the attention of the Communists on India, China, and Southeast Asia. Lenin, then was the father of the Communist doctrine of insurgency.

Joseph Stalin, though forced to retrench by internal problems and World War II, enlarged slightly on Lenin's theories. He paved the way for post-war revolutionary movements through training schools in the Soviet Union and, when he thought the time was ripe, ordered those revolutions to begin in Southeast Asia. Stalin's heirs have continued the work of revolution. Recognizing and fearing the consequences of all-out war in the Nuclear Age, they have turned to revolutionary warfare as the means of further expansion.

Mao Tse-tung, a trained scholar, read extensively in the published works of the Western Communists early in life. His writings reflect this study, but there are differences which may well be due to the experience of the Long March. The most important of these was the role assigned to the peasants in the scheme of revolution. In distinct contrast to all previous communist writers, Mao relegated the urban proletariat to a secondary role and placed the peasants in the vanguard of the revolution. Modern Asian Communists have accepted this viewpoint and enjoyed considerable success, particularly in Southeast Asia, as a direct result. Another major difference in theory developed in regard to nationalism. Orthodox Communists had always regarded nationalism as an evil to be done away with and replaced by class consciousness. Mao believed nationalism to be an authentic value which could and should be retained.

Mao has been credited with systematizing the techniques of using insurgency to seize national power. His admirers acclaim him as the father of the protracted conflict concept--that is, modern insurgency. The study of his writings certainly reveals a clear picture of the development of insurgency, a development which takes place in five stages. Whether or not Mao discovered any so-called immutable laws of war which differ from the generally accepted principles of war is a moot point. The important thing is that he and his followers think that he did and act accordingly confident.

To date, the most successful of Mao's disciples have been the Vietnamese Communists. The writings of two of their leaders, Truong Chinh and Vo Nguyen Giap, have received wide distribution. Borrowing liberally from the thought and terminology of Mao, both are in complete agreement as to what constitutes the first four stages of insurgency. Truong Chinh adds the fifth; Giap ignores it. While original contributions to doctrine are lacking, the writings of Truong and Giap illustrate clearly the application of the thought of Comrade Mao.

A case study of the application of the Communist theory of insurgency in Laos illustrates the pattern of aggression which we can expect to see in underdeveloped areas of the world. While the Laotian Communists have not yet achieved their ultimate objective, neither have countermeasures proved entirely successful. The cyclical nature of the protracted conflict has been readily apparent in Laos. When expedient, cease-fires have been concluded whenever local military considerations and the international political climate have made such agreements advantageous to the Communists. The strengthened base thus acquired has been used to initiate new conflict whenever the opportunity was favorable. The ultimate goal of Communist control of Laos has taken second priority only to the survival of the Communist movement itself.

From this study of the writings of Communist theoreticians, and the application of theory in Laos, there has emerged a clear picture of the Communist theory of insurgency. This picture does not agree with the three stages of insurgency presented by official United States Army doctrine, as expressed in the Special Warfare School's Counterinsurgency Planning Guide (ST 31-176) and popularized by the press.

On closer examination, the anatomy of insurgency more closely resembles that of the human hand. This division of insurgency into five stages of development reflects accurately the progression from planning to firm, de facto control of a nation. Like the thumb, without which the hand is weak and cannot function properly, the first and most important stage is that of covert organization and planning. Recognition of the importance of this phase is expressed in Mao's dictum: "One slow, four fast." The second stage, the initial combat or guerrilla warfare phase, is the first obvious one. The insurgency movement emerges from its covert cocoon and, as a forefinger, points to the possible removal of the existing regime through the use of force. As the insurgent movement continues to develop, the strength of the

guerrillas will approach that of the regular forces. This state of near parity is the third, or transitional, stage of an insurgency. When this transition has been completed and the regularized insurgents are ready to meet the forces of the existing regime in open battle, the insurgency has reached the fourth, or conventional warfare, stage of development. The fifth and final stage is like the little finger of the hand, seldom noticed, often ignored, but necessary to a complete anatomy. This is the stage of consolidation, the securing of firm control of the nation and the complete elimination of all possible dissident elements. It is this stage, consolidation, which tends to preclude the use of insurgency tactics against an entrenched Communist regime. In the entire anatomy of insurgency, the greatest emphasis is placed on political actions. Such actions are as the palm of the hand, making possible coordination as well as providing the connection between the fingers, or stages of insurgency. The role of politics is paramount in an insurgency; all else is secondary.

There is far more to insurgency than guerrilla warfare. This is but one aspect, one digit, of the whole. The sooner we realize this fact, and study the entire anatomy of insurgency, the better. The greater our knowledge and understanding of the Communist theory of insurgency--as they themselves see it--the greater the probability of our ultimate victory.

43. THE POLITICAL ESTABLISHMENT IN THE ARMY OF THE REPUBLIC OF CHINA, by Major Joseph J. Heinlein, Jr., USA, 126 p.

The Political Establishment within the armed forces of the Government of the Republic of China (GRC) is an organization akin to the political commissar system of the Army of the Soviet Union. As such it is the object of criticism leveled by many military observers. Nevertheless, the GRC holds that the Political Establishment is not only appropriate, but necessary in its military structure.

The question addressed in this paper is: does the Army of the Republic of China have a requirement for the Political Establishment in performing its mission of maintaining national security? Relative to this question, historical analysis is used to verify findings by precedent.

An adequate answer to this query must be found through an examination of the historical development of the Political Establishment. In conjunction with this examination it is necessary to understand the political influences which bear on the issue as well as the problems which the Political Establishment was intended to solve in the past. An evaluation of the contributions made to the GRC Army can be made based on the success of the Political Establishment in fulfilling its mission in the past. By equating the current threat to Taiwan to the historical threat which the Political Establishment was designed to counter, a judgement can be made as to whether or not there exists a need for the organization today. Given positive contributions by the Political Establishment in the past, it can be concluded that the present day Political Establishment will continue to make positive contributions in coping with current problems.

Examination of the historical development of the Political Establishment and concurrent evaluation of its effectiveness can be best presented in terms of the major military engagements in which Nationalist China has participated to wit: the Northern Expedition, the Kiangsi Campaigns, World War II, and the Chinese Civil War.

Amid the melee of warlord factionalism following the overthrow of the Manchu Dynasty in 1911, Sun Yat-sen saw a need for a strong, loyal army to further the aims of the Kuomintang (KMT) to unify China politically. Adopting Soviet Russia military methods and instituting a political commissar system proved to be an adequate means of raising such an army. This was the inception of the Political Establishment. The Political Establishment proved effective in moulding heterogeneous elements into a sufficiently well-knit military force to allow the KMT to unify China through the Northern Expedition.

The ideological basis for political activities in the Army was the San Min Chu I. The Three People's Principles of Sun Yat-sen were Nationalism, Democracy, and People's Livelihood. This revolutionary ideology was aimed at satisfying the aspirations of a developing China left with a political void when the empire collapsed.

In the 1930's the KMT waged a number of campaigns to eliminate the Communists from their stronghold in Kiangsi Province. These efforts did not succeed until the advent of certain innovations by the Political Establishment. Political officers undertook such activities as intelligence, civil affairs, population control, and propaganda, which contributed to the success of the Kiangsi Campaigns in routing the Reds from their base.

During the war against Japan the KMT-Communist coalition posed problems of Red subversion. There was also a need to buoy the morale of the Chinese troops. The Political Establishment successfully filled this requirement. However, the KMT prostituted the ideological content of the San Min Chu I in favor of the Confucian ethic of loyalty to Chiang Kai-shek and thereby utilized the Political Establishment as a tool to maintain a military dictatorship which simultaneously weakened the KMT position vis-a-vis the Communists.

Attempts to curry favor with the United States caused the KMT to abolish the Political Establishment during the Civil War. Considering the authoritarian flavor of the KMT regime, this proved a detriment in that a means for maintaining power was lost.

Consolidation in Taiwan after the fall of the Mainland saw a return of the Political Establishment. Its effectiveness is attested to by the purges that followed and the reassertion of KMT authority over the remnants of the Nationalist Army and the rebellious Taiwanese population.

Today the Political Establishment in the GRC Army is a large and powerful organization. Many of the functions of the organization have counterparts in the United States Army. Centralized control of these functions by

the Political Establishment makes it unique and different from the administration of like activities in the United States Army. Any function which can be construed to be political in nature is controlled by the Political Establishment.

The major disadvantage of this broad swath of influence is that the Political Establishment has great potential for impeding the exercise of the principle of unity of command.

There are certain contemporaneous circumstances which cause the GRC concern about the loyalty of its Army. Taiwanese animosities render the Formosan conscript suspect in the Army. Traditional Chinese cultural identification and lack of nationalism present the possibility that the Chinese soldier would identify with the Mainland rather than with the KMT regime on Taiwan. Chinese Communist subversion is well able to capitalize on such weaknesses. This is the current threat on which the Political Establishment must orient.

The current threat indicates a requirement for an organization to cope with possible disloyalty. An alternative solution is to eliminate the threat through establishment of a democratic system in which context loyalty would ensue from popular support. Such action at this time, given the nature of the current Nationalist Government, would likely result in the fall of that government and would certainly result in an unacceptable degree of political instability.

Based on the nature of the present threat, the composition of the GRC Army, and the historical success of the Political Establishment, it is concluded that, by virtue of the possible alternatives, there does exist a requirement for the Political Establishment in the Army of the Republic of China.

44. EVOLUTION OF THE INTELLIGENCE FUNCTION AT DIVISION LEVEL FROM 1903 TO 1945, by Major R. C. Mullen, Jr., USA, 138 p.

This thesis traces the development of the intelligence function at division level in the United States Army from 1903 until 1945. This paper traces the evolution of the intelligence function by analyzing three areas: organization, functions, and procedures.

A brief introduction of the approach to the subject of the thesis is followed by a historical tracking of staff development throughout the world until the beginning of the modern military era in the 17th century. Staff development in the three countries which have the most effect on staff development in the United States Army, namely, Great Britain, France, and Germany is considered. In each case the influence on the United States is analyzed. Also studies of staff development in the Soviet Union and Communist China are conducted. A brief chronicle of staff development in the United States Army prior to 1903 is made. The time span from 1903 until 1945 is divided

into three distinct periods: 1903-1919, 1920-1939, and 1940-1945. These three periods were chosen because of world and domestic conditions existing during them and because of the effect of those conditions on the military forces of this nation. During each of these p riods the evolution of the intelligence function at division level is examined in the light of organization, functions, and procedures.

The year 1903 was chosen as a starting point because in that year the Congress approved the creation of a General Staff for the United States Army. Intelligence had actually commenced as a function of the War Department in 1885, and the Military Attache system had begun in 1889. Development from that year until 1903 was negligible. In 1903 the War Department considered intelligence in two categories. The first was intelligence collected by the War Department in peacetime; the second was intelligence collected by the troops in the field in battle. Because the nation was not at war in 1903, there was little thought given to the organization and procedures to be used to collect intelligence in time of war. Prior to the entry of the United States into World War I, combat divisions of the United States Army were dispersed at regimental size posts throughout the country, and there was no intelligence function at the staff level. Reconnaissance was performed and reported by the performing unit to the commander. Until 1917 the staff system of the United States was based primarily on the British staff system, adopted at the beginning of the Revolutionary War. In 1917 the United States adopted a staff system based on the French bureau system. This system consisted of three staff divisions to perform the functions of administration, intelligence, and operations. However, the chief innovation in staff functions was in the area of intelligence. The intelligence function wa elatively new to the Army as a staff function, and collection, processing, and dissemination of intelligence were completely new to the newly organized combat divisions. The intelligence function at division level in the United States Army literally began in 1917. It was during World War I that a supply function was added. (However, it was not until after World War II that civil affairs became a separate function.) Fundamentally, this system adopted in 1917 is the same system in the United States Army today.

With organization, functions, and procedures based on the best aspects of the British and French systems, the United States Army began to test its intelligence system in combat. Some changes were made based on lessons learned in combat; however, with few exceptions, the functions established at that time have remained in effect until the present. Organizationally, there have been significant changes in the size of the intelligence section. The primary reason has been a debate as to whether intelligence specialists should be members of the section or members of a separate unit. Procedurally, the changes since World War I have been more in the refinement and improvement of established procedures than in changes to these procedures. The collection agencies, sources of information, and administrative files and reports established during this time have varied little, if any. From the foregoing it can be concluded that the basic system established during World War I created a firm foundation for the intelligence function at division level within the United States Army.

The period of time between the two world wars was one of a military as well as an economic depression. The Army operated at drastically reduced strengths, and once again the four combat divisions on active duty were dispersed at regimental size posts throughout the country. Development in staff doctrine during this period was mainly confined to refinement in procedures and techniques developed at the Command and General Staff School, Fort Leavenworth. The G2 was assigned responsibility for operating the visitors bureau as well as performing the public information function.

The Army began a buildup in strength in 1936 and by June 1941 had almost a million and a half men in its ranks. During the first stages of World War II a tremendous demand was created for trained staff officers, and the training of literally thousands of these officers was the responsibility of the school at Ft Leavenworth. From an organizational standpoint the war saw the deletion of the observers from the intelligence section and a reduction of the section's strength. However, in actual combat each section was augmented to enable it to perform its mission on a twenty-four hours a day basis. An operations section manned by the combined G2-G3 sections was used in some divisions, and the intelligence section made use of the advances in technology in such areas as radar, cameras, radios, and aircraft to serve in collection and dissemination of intelligence. Standing operating procedures had been introduced just prior to the entry of the United States into the war and these along with the field order, estimates, the intelligence annex, and other administrative procedures were refined during the war. From a functional standpoint the G2 had not gained any functions by the end of the war but did succeed in losing the responsibility for public information and the operation of the visitors bureau. Since the end of World War II the nuclear age, psychological warfare, the cold war, unconventional war, wars of national liberation, and internal defense situations have appeared. Refinement of procedures and the continuous advances in technology have aided the G2 in accomplishing his mission of advising the commander on the enemy, weather, and terrain. Specialists have appeared on the scene to assist him. Although the enemy is more difficult to find, fix and destroy, the mission remains the same.

The conclusions reached as a result of this study are:

(1) The evolution of the intelligence function at division level within the United States Army began in 1917 with the United States entry into World War I.

(2) With few exceptions the organization, functions, and procedures established during World War I created the foundation of the combat intelligence system in effect at the time of this writing.

(3) The period since World War I has been primarily one of improvements and refinements on the organization, functions, and procedures established in that war and has been notable for its technological advancements.

(4) The G3 is the principal staff officer on the division staff because he considers all the aspects that other staff officers do in making his recommendations to the commander. Other staff officers consider almost exclusively their primary area of responsibility.

(5) It is the intelligence officer's responsibility in peacetime to ensure that intelligence is understood and not forgotten. Intelligence must be considered so as to contribute to the mission of the command.

45. EVOLUTION OF THE FIELD ARTILLERY TARGET ACQUISITION BATTALION (FATAB), by Lieutenant Colonel William B. Nolde, USA, 132 p.

Artillery target acquisition is a matter of prime importance to field commanders today. The Field Artillery Target Acquisition Battalion (FATAB) occupies a key position among the various agencies involved in the artillery target acquisition problem. As such, the FATAB's organizational structure, mission, and employment doctrine is being subjected to continuous evaluation and review. From time to time, proposals are made and recommendations submitted that, if adopted, would eliminate the FATAB as a battalion size unit assigned or attached to the corps artillery and would substitute separate field artillery target acquisition batteries at division artillery level. To properly evaluate these and other FATAB matters, it is important that the decision makers have an appreciation and an understanding of the factors and experiences which have made the FATAB what it is today. With this type of background knowledge, the decision maker will be better able to adjudge the validity of proposed changes by correlating and analyzing them with related changes in the total military environment. In this manner the lessons of the past, rather than being ignored, can be molded and adapted to the realities of the present and the future.

In tracing the evolution of the FATAB, books, documents, articles, and reports that reflected the changing artillery target acquisition problems, organization, and doctrine down through the years have been examined. The circumstances which dictated the initial establishment of a type FATAB have been identified, along with an appraisal of foreign army influence in that decision. The organization, mission, and employment doctrine of the type FATAB from its initial appearance to the present have been traced. The rationale behind past FATAB changes has been identified, to include the wartime experiences which have influenced present organization and doctrine. The present organization is evaluated briefly in light of the current artillery target acquisition problem. Following is a brief of the data and findings of this historical study.

Until the dawn of the twentieth century, field artillery was essentially a direct fire weapon, and target acquisition was not a major problem. Because of late nineteenth century improvements in artillery ammunition and materiel, indirect fire became increasingly more important, and its usefulness was accepted before World War I had begun. The magnitude of the target acquisition and counter battery problem resulting from increased artillery ranges and the indirect fire technique was not anticipated by the allied powers.

Flash ranging and sound ranging were developed during the early years of the war to assist in the counter battery effort. Flash ranging was an outgrowth of field survey work while the initial developmental work on sound ranging was done by the French. These techniques were fairly well perfected and accepted by both the British and the French forces by the time the United States entered the conflict. The French perfection of modern unobserved fire techniques by 1916-1917 increased the importance of such target acquisition techniques as flash and sound ranging.

The American Expeditionary Forces (A.E.F.) incorporated flash and sound ranging sections into their artillery target acquisition and counter battery organization, although these sections were not then authorized in the United States War Department force structure. The flash and sound sections of World War I were corps of engineer units under the operational control of the Artillery Information Service. The organizational structure, operational techniques, and employment doctrine for the American flash and sound ranging sections of World War I are recorded in various A.E.F. publications. Results achieved and problems encountered were also reported.

An Observation (Flash) Battalion first appeared in the United States artillery force structure in 1922. The sound ranging capability was, at the same time, centralized in a separate Artillery Sound Ranging Service consisting of ten sound ranging companies. In 1930, as a result of further tests and evaluation, the sound and flash capabilities were united in an Observation (Flash and Sound) Battalion. In 1931 the separate Sound Ranging Service was eliminated.

During World War I, the artillery counter battery mission was transferred from the division artillery to the corps artillery. Post-war reviews upheld the validity of this decision. As a result, the Observation Battalion, when it appeared in the artillery force structure, was authorized for each corps artillery with an additional battalion to be found in the army artillery. The army battalion was to be used to supplement the corps artillery battalion efforts where needed.

World War II experiences produced some significant changes in the type FATAB missions and organization. The type FATAB was employed in a great variety of situations and under varying circumstances. Experience was gained in both centralized and decentralized operations. Because the European Theater received priority on available military assets, the concentration of FATAB units was found there. The Pacific Theater experiences of World War II have made important but lesser contributions to the FATAB evolution.

The Korean War produced the first real combat test for counter battery radar and it provided further experience in FATAB decentralized operations. Fought in the shadows of the nuclear and missile age, it provided the arena for a detailed artillery target acquisition study.

The threat of nuclear weapon use has had a profound effect on artillery target acquisition thinking in the past decade. The "timeliness" and the "completeness" standards for a nonnuclear environment would be totally inadequate for a nuclear war. The greatly increased ranges of artillery missiles have further complicated the entire problem. These considerations have influenced recent FATAB developments.

A detailed analysis of the foregoing data produces the following conclusions:

1. The FATAB organization and mission that have evolved to date reflect artillery target acquisition problems and experiences faced in two world wars and in a limited conventional war (Korea). To a lesser extent, they reflect projected requirements for this type unit on a nuclear battlefield.

2. There is little requirement for a FATAB in a low level insurgency war such as Vietnam.

3. The maximum range capability of the currently available sound, flash, and radar equipment would be a severe limitation in an active missile and rocket environment and against long range cannon.

4. The FATAB has wide responsibilities and broad artillery missions no longer confined to the field of hostile artillery location, as was true at the time of its origin.

5. Today the FATAB is only one element in a vast artillery target acquisition complex extending throughout all levels of command. Alone, its value in an active nuclear and missile environment would be severely limited. The value of the FATAB is enhanced when it is properly meshed with the remaining target acquisition agencies found in the division, corps, and army zone.

6. The FATAB organization that has evolved today is quite flexible. It can be effectively fragmented with target acquisition batteries attached to an artillery group or to a division artillery.

7. There is no one "correct" or "best" way to deploy a type FATAB. The situation will dictate the decision. The flexibility of the FATAB is a significant asset when viewed aside the wide variations to be found in the potential battlefields of this era.

8. The FATAB cannot provide the artillery target acquisition service that would be desired in an active nuclear environment. However, its value and worth should not be measured against the nuclear standard. Until some significant target acquisition breakthrough occurs, and as long as tube artillery weapons and conventional artillery ammunition retain a useful battlefield role, the current FATAB concept appears sound. The military considerations and the battlefield experiences which have shaped its growth and molded its employment doctrine are still valid today.

46. INTELLIGENCE AND VIETNAM OPERATIONS, by Major R. L. Platt, USA, 137 p.

The land and people of South Vietnam have been subjected to the ravages of war for more than twenty years. First, there was a nine-year revolution, commonly called the "Vietnam War" ending with French Colonial rule. Although other portions of French Indo-China (Cambodia, Laos, and North Vietnam) acquired recognized autonomy in 1954, South Vietnam's national status was in doubt and its internal stability was precarious. There were two years of civil war and internal turmoil before a ligitimate government emerged in 1956 with control of the land and its people. However, after eleven years of conflict, the Republic of Vietnam had not achieved unchallenged independence. A Communist sponsored war to annex the nation to North Vietnam threatened South Vietnam's independence.

The present conflict began in 1956 with protest demonstrations and propaganda maneuvers in South Vietnam, directed and supported by North Vietnam. Next, North Vietnam employed its agents, the Viet Cong, to conduct kidnappings, assassinations, blackmail, subversion, espionage, and sabotage activities. Finally, North Vietnam instigated military operation with Viet Cong forces assisted by infiltrated North Vietnamese army units. North Vietnam continues a policy of escalation and flagrant aggression in South Vietnam.

The conflict threatens the independence and peace of all Southeast Asian nations. Mindful of Communist intentions, the United States, South Korea, Australia, the Philippines, Thailand, and New Zealand have become militarily involved in support of the Republic of South Vietnam. Communist countries are supporting North Vietnam and the Viet Cong.

Allied forces number approximately one million men; Communist forces are estimated to be about one-third this number. Although seeming one-sided in favor of the allied nations, the conflict cannot be so simply viewed. The nature of the conflict and the operational environment are far more complex than that of conventional warfare. The Vietnam conflict involves the entire population. The conflict has the characteristics of an insurgent war, a limited conventional war, or a civil war. The conflict is "total war". The military, political, psycho-sociological, and economic tactics employed defy segregation into type and adequate comparison to the factors of conventional warfare. In this kind of war, the operational environment, the land and the people, play an all important role in military strategy.

The Communist enemy enjoyed an initial favorable stature in South Vietnam. Following the successful Vietnamese war expelling the French, the Vietnamese Communists were well organized; they controlled northern Vietnam and established a government there. In southern Vietnam they had a well-organized underground, initially to facilitate their propaganda, subversion, and intelligence efforts. Later this organization was to carry on their insurgent activities. Behind the facade of the National Liberation Front,

North Vietnam coordinates, directs, controls, and supports all operations in South Vietnam. Through an extensive organization extending from Hanoi to the hamlet and the smallest military unit, centralized direction and integration of all activities are exercised by North Vietnam.

The enemy military forces consist of South Vietnamese Communist regular units and guerrilla forces and units of the North Vietnamese Army. These forces are often integrated, and they are ususally mutually supporting. Their arms are usually simple and lightweight, and their training is more than adequate to accomplish the assigned tasks. Enemy forces in South Vietnam probably number only 300,000, but these forces are externally supported by the entire armed forces of North Vietnam and internally supported by an estimated 25 percent of the people and land of South Vietnam.

The enemy employs a variety of tactics ranging from propoganda, murder, and terror to the more conventional military tactics. He varies the composition of his forces and his tactics to meet the existing situation and he does not adhere to humanitarian ideals in the conduct of his activities. By any method of evaluation, the enemy is an effective and formidable force. This is evidenced by his control of 25 percent of the land and people and his success in preventing effective allied control over another 50 percent of the country.

The enemy's elaborate and effective intelligence and logistics system permits accurate planning, conduct, and support of all activities. His intelligence nets cover all South Vietnam and his agents have penetrated every segment of society. Through various, and usually harsh, means the enemy obtains the required intelligence, protection, and logistical support from the people. Thus, control of the people, through control of the villages, has been his strategy. His thoroughness in subversion and control of the people has enabled him to continue and to expand his activities in spite of superior allied forces. The enemy's successes can largely be attributed to his knowledge and exploitation of environmental conditions in South Vietnam.

The allies have three basic objectives in Vietnam: (1) locate and destroy the enemy force, (2) achieve and maintain internal security, and (3) through revolutionary development and nation building progress, eradicate the underlying causes of population discontent which permit the wide spectrum of enemy activity. While these three objectives may seem only vaguely interrelated, efforts toward their accomplishment have proven to be deeply interrelated. Solution of these objectives requires initial and continual intelligence, a long range strategy with carefully designed programs, diligent and careful use of all available resources, consistent, skillful, and coordinated execution of all internal defense programs and operations, and integration, patience, determination, and thoroughness in all endeavors.

Success in any measurable degree by either side is dependent upon efficiency in the intelligence field. In the Vietnam war, military power without intelligence is ineffective. The prerequisites for providing the required intelligence are centralized management, integration of effort, exploitation of all available resources, careful evaluation of information, and speed in dissemination of intelligence. Good intelligence provides the potential for

effective actions in all efforts, be they military, political, economic, psychological, and sociological. Equally important counterintelligence measures facilitate appropriate defensive offensive operations. In the final analysis, good intelligence and counterintelligence provide the basis for effectiveness in all activities required to preserve accomplishments.

The intelligence resources on hand in Vietnam are much the same as those available in a conventional war. Because the enemy lives among the people, the people are potentially the most productive source of intelligence. Consequently, control of the people is the objective of all operations and, in particular, the objective of intelligence agencies. The means and methods of obtaining intelligence are not new. However, because of geographical obstacles, increased reliance is placed on aerial observation and photography. Numerous intelligence agencies are available in Vietnam, but until recently their efforts were not integrated. There is still no centralized authority in control of all intelligence activities.

To facilitate centralized intelligence management, processing, and dissemination, combined intelligence centers have been formed with a representative from each senior allied headquarters. The four combined centers are the Combined Intelligence Center, the Combined Military Interrogation Center, the Combined Document Exploitation Center, and the Combined Materiel Exploitation Center. The Combined Intelligence Center has centralized the functions of evaluating, cataloging, and disseminating intelligence from all intelligence agencies in South Vietnam. In order to deal with the volume of information received and to speed dissemination, a computerized system has been established. The other three centers function in their respective areas and contribute intelligence to the Combined Intelligence Center. The establishment of these centers is a major step toward unity of effort in accomplishing the intelligence mission in Vietnam.

To insure an integration of effort and an exploitation of all available intelligence resources at lower levels, joint operations and intelligence centers (JOIC) have been established in each province, district, and tactical area of operations. These centers are composed of representatives of political, military police, and other civil organizations within an area. The JOIC's facilitate collection, evaluation and dissemination of intelligence. These centers are principal contributors to and recipients of the Combined Intelligence Center. These JOIC's complete the structure of the allied intelligence system in Vietnam.

Much progress has been made in the integration of all programs, activities, and operations. It is now realized that all endeavors to accomplish the objectives of the allied forces are interrelated and mutually supporting. Although a combined command has not been formed--because of political and psychological reasons--allied efforts are coordinated and integrated through mutual agreements and cooperation. Whether this approach will achieve the necessary integration of efforts remains to be seen. In any case, it is a step in the direction of unity of purpose.

In the absence of an allied combined command to exercise centralized control of all operations and activities, tactical areas of operation (TAOR) have been assigned to commanders of the various allied forces and their subordinate units. Generally, the entire country has been divided into TAOR's. However, in joint, large-scale operations, TAOR's are not always applicable. In joint operations, assignment of tasks and coordination of maneuver are required, but this is possible only through mutual agreement between the forces involved. To facilitate coordination of combat support of allied units operating within an area, and support of joint operations, combat support coordination centers are formed. Joint operations and intelligence centers previously mentioned are formed at various levels, not only to insure adequate intelligence is available, but also to facilitate quick reaction by combat forces to the intelligence provided.

To coordinate all allied civic, economic, and psychosocial operations in Vietnam, the Office of Civil Operations (OCO) has recently been established. Although the OCO has no comparable military counterpart organization, no problems are anticipated in effecting coordination with senior allied military headquarters. The OCO was long overdue and should prove to be effective.

A variety of operations are conducted by the allies to accomplish a solution to the conflict. These have been categorized as combat operations, stability operations, and nation-building programs. The close integration of all these activities determines the success of any one.

Combat operations are basically designed to destroy the enemy forces. Stability operations are designed to establish friendly control over the country and prevent areas reverting to enemy control. Nation-building programs are implemented to eradicate conditions which permit Communist insurgency and to build a national foundation.

All operations in Vietnam are becoming more integrated, and a near balance has been achieved between combat operations, stability operations, and nation-building programs. An appreciation of the full importance of intelligence to the successful accomplishment of all activities is steadily and increasingly being recognized.

Sound intelligence provides the anvil for the application of combat power. Adequate intelligence and counterintelligence are principal weapons employed in stability operations. Good intelligence and counterintelligence enable the design of nation-building programs. Intelligence and counterintelligence facilitate measurement of the effectivensss of all internal defense programs. There is no alternative to intelligence in Vietnam operations.

47. A PROPOSED DOCTRINE FOR FIELD ARMY COMMUNICATIONS SYSTEMS CONTROL, by Major Clare R. J. Rogers, USA, 204 p.

A commander without communications is only as effective as the range of his voice. Control of the diversified and widely scattered elements of the modern army demands swift, reliable, and secure communications to make the

commander in fact what he is in name. In the years since World War II, the problem of controlling signal operations has grown more and more complicated with the introduction of new, complex, and ever-changing machines and equipment. This thesis examines one area of signal operations: the tactical problem of day-to-day control of the electrical and electronic communications systems of the field army.

The nature and extent of this problem is formulated by analyzing the development of tactical communications systems, their technical characteristics, and the requirements which they must satisfy within the framework of the future field army. The field army network is composed of signal centers providing support to using organizations by establishing communications facilities at major headquarters or within designated geographical areas. These signal centers are linked by multichannel systems operating over cable, radio relay, or tropospheric scatter radio transmission media. Each system is capable of providing several voice channels with a bandwidth of 4 kc and a circuit net loss of 3 db. The thousands of circuits required to support the subordinate units of the field army are obtained by interconnecting channels from one signal center to another until a path between the desired locations is established.

The present United States Army doctrine and the various methods which have been developed over the years for controlling communications networks are reviewed, and the following criteria which an effective tactical communications systems control doctrine must meet are established.

1. The doctrine must be compatible with the organization and capabilities of the field army signal brigade, the senior signal headquarters within the field army.

2. It must provide a control element with sufficient authority to direct changes in the field army communications network and to insure that these changes are made rapidly and effectively. The control element must be equipped to transmit its instructions rapidly to the executing signal agencies.

3. Centralized control of the field army communications network must be maintained, while insuring that systems control actions are executed at the lowest possible level.

4. Communications operators and users must be simply identified in terms of their functions and their requirements.

5. A simple and concise method for identifying systems and circuits must be provided.

6. A system of communications records, reports, and orders which can be prepared and updated rapidly and efficiently by either manual or automated procedures must be established.

Field Manual FM 11-21, Tactical Signal Communication Systems: Army, Corps, and Division, contains the present United States Army doctrine for systems control. It is found to be general in nature and not compatible with the signal organization of the 1965-1970 field army. The guidance

of FM 11-21 does not appear capable of application to automated systems control operations due to its lack of specific direction in the matter of systems control orders and reports. United States Seventh Army had developed a systems control doctrine differing completely from FM 11-21. It meets most of the criteria listed above but does not provide a procedure for preparing systems control orders in automated format. United States Eighth Army has retained the signal organization of the Korean War period. Its methods of systems control also differ greatly from those of FM 11-21 but have not developed specifically for use on the Korean peninsula and do not appear generally applicable to the 1965-1970 field army. The United States Army Combat Developments study, Improved Applications of Manual Signal Systems Control and Signal Information Service, for the Field Army Command and Area Communications Systems, 1965-1970 (U), outlines an organization for systems control that is fully compatible with the modern field army signal organization, but its procedures utilize records, reports, and orders that are neither particularly concise nor applicable to manual methods of systems control. The United States Defense Communications Agency uses a fully developed automatic data processing system to carry out its communications control functions. However, its control programs are designed to be applied to a multiservice world-wide communications network rather than to a tactical system.

It is apparent that none of these procedures meet all of the criteria for an adequate tactical systems control doctrine. A new doctrine is proposed which is simple, concise, and effective. It retains the desirable elements of the previous systems control methods and introduces new techniques for those areas where previous procedures have been found to be inadequate. The doctrine is tested within the framework of a type large-landmass field army to determine the ability of the suggested procedures to react promptly and effectively to the ever-changing aspects of combat. The proposed doctrine is seen to provide a means for accomplishing the day-to-day control of the field army communications network using manual procedures which are easily converted to automatic data processing methods.

The impact which the introduction of automatic data processing systems and automatic circuit switching equipment will have on the post-1970 field army is analyzed. Both techniques are seen to complement each other: automatic data processing equipment will greatly reduce the time and effort necessary to formulate and carry out systems control actions, while automatic circuit switching will eliminate one of the major tasks of the systems control element, that of individual circuit identification and control.

The proposed doctrine developed in this thesis offers significant advantages over the previous methods of systems control. It provides clear and positive operating guidance for the field army systems control center and subordinate battalion control centers. Systems control actions are taken at the lowest possible level to provide flexibility in controlling the field army communications network. Centralized control is maintained by a system of simple and concise reports which give the field army systems control center up-to-date information about the status of the field army network and its components. Application of this systems control method to

the field army communications network will materially assist the signal brigade commander in the accomplishment of his mission to provide signal communications for the field army.

48. LIBERATION OF PRISONERS OF WAR, by Major Exequiel R. Sevilia, Jr., USA, 86 p.

This study proposes concepts and doctrine for military operations which pertain to the liberation of prisoners of war. In the development of the recommendations, four liberating operations of World War II were analyzed and evaluated.

Chapter I examines current doctrinal publications relating to the liberation of prisoners of war. Emphasis is made on the lack of doctrine for raid type liberating operations and on the reasons for considering active efforts to free captured American troops.

Chapter II is a study of a raid in which a light infantry force, the 6th Ranger Battalion, with significant assistance from guerrillas, successfully liberated 513 American and Allied prisoners of war from a prison camp located near Cabanatuan, Philippines. This operation was highlighted by an extremely thorough reconnaissance made to offset an initial lack of intelligence, by detailed briefing of all participants to balance a lack of rehearsal, and by dependence on guerrilla forces for combat service support as well as additional combat forces.

Chapter III is a study of the liberation of 3,766 American and Allied civilian internees at Santo Tomas University, Manila, Philippines. This operation was a rapid exploitation by a mechanized brigade of the 1st Cavalry Division to liberate the internees, followed by a link-up with following elements of the division. The use of tactical air power as a frontal and flank screen is described. The failure to liberate 1,330 prisoners at the nearby Bilibed Prison is also considered.

Chapter IV is a study of a raid conducted by elements of the 11th Airborne Division. This force executed simultaneous airborne, amphibious, and overland assaults to liberate 2,147 American and Allied prisoners from a camp at Los Banos, Philippines. Detailed planning based on intelligence gained by aerial and ground reconnaissance and reports from escaped prisoners is noted. Guerrilla support in the ground reconnaissance and in the attack itself is described.

Chapter V is a study of a raid, wherein a mechanized infantry-armor task force of the 4th Armored Division failed in its attempt to liberate 1,230 American prisoners of war at Hammelburg, Germany. The lack of prior planning, intelligence, and tactical air support, as well as the failure to bypass enemy units, are examined.

Chapter VI analyzes and evaluates the four operations from the aspects of intelligence, surprise and mobility, planning, force composition, transportation, withdrawal, air cover, indigenous support, and the reception of the prisoners.

Chapter VII presents the concepts and doctrine derived from the analysis of the preceding chapter. These concepts are divided into three main groups: pre-attack, which covers intelligence, task organization, and planning; attack, which includes air cover, ground attack, and the use of indigenous forces; and post-attack, which covers the withdrawal and the reception of the liberated prisoners.

49. A HISTORY OF THE U.S. ARMY IN OPERATIONS RESEARCH, by Major F. L. Smith, USA, 119 p.

This thesis is an incomplete historical investigation of the scientific method henceforth referred to as "operations research". The purpose of this thesis is to trace the evolution of operations research in the U.S. Army and to provide the military staff officer and decision-maker with an appreciation for the usefulness of the method and the scope of its application to military problem-solving.

Operations research has become a significant tool in the Army's arsenal. Its application in cost-effectiveness studies, development and improvement of weapons, equipment, tactics, and strategy, and other operational activities is an accepted fact. Operations research is not new. Its techniques can be traced from the investigations of ancient scientists. Operations research merely combines the normal scientific observations undertaken by any scientist with systematic analysis employing probability and statistical theory to more effectively identify and select one or more alternative courses of action. In itself, operations research does not make decisions--it merely assists the staff-planner and decision-maker in identifying the alternatives and selecting a course of action based upon the stated objective. In order for the military staff-planner and decision-maker to most effectively use this tool, they must understand the purpose of the method, its application, its potential, and its pitfalls.

Operations research was introduced in the United States during the early stages of World War II to assist in overcoming severe deficiencies in the research and development programs of the military services. Historically the military services of the United States have been reliant upon the nation's civilian inventors and industry to develop and produce new weapons and equipment. Prior to World War II many government sponsored civilian scientific agencies were organized. However, most of these organizations were limited in scope and temporary in nature.

In 1942, the United States deployed its first operations research groups with Navy and Army Air Corps elements in the United States, Europe, and the Mediterranean. Later the Office of Scientific Research and Development (OSRD) and the Office of Field Services (OFS) were created to satisfy the requirement for integration of available scientific effort at home and to provide technical support for the field forces. These agencies were the primary United States operations research activities of World War II.

The OSRD and the OFS were terminated at the end of World War II and the Army retained some of the operations research activities within the technical services. Various means, such as advisory committees, research boards, etc., were used to keep the civilian and military scientific communities working together; but, generally speaking, they were only marginally successful. Following the reorganization of the Defense Department in 1948, the Army established its first of many research contract groups, the General Research Office, with the Johns Hopkins University. Since then other groups have been developed to study technical problems, to analyze such problems as counterinsurgency, human resources, tactics and strategy, and to collect data to support area studies. The Army also continued the expansion of its in-house operations research capability in order to meet the requirements generated by Department of the Army, Army Materiel Command, Combat Developments Command, and others.

During fiscal year 1967, an operations research/systems analysis program was formally established by the Army. This step was in recognition of the increased importance of operations research within the Army and the Defense Department. The civilian scientific and managerial communities have also seen the tremendous opportunities presented by the proper application of the method. Thus the future of operations research seems to be limited only by the imagination of its analysts and the acceptance they can achieve among the staff-planners and decision-makers. The Army should significantly improve its operations research posture with increased and improved schooling for its junior and field grade officers.

50. MEASURING SUCCESS IN POPULACE AND RESOURCES CONTROL, by Major B. M. Watts, USA, 125 p.

A characteristic of insurgency and internal defense is the difficulty of the leaders to accurately guage progress or regression. The measurement of progress in internal defense is necessary in order to provide responsible officials with a basis for continuing, improving, or discarding the adopted strategy and making the vital decisions required. Traditional indicators of success such as divisions destroyed, territory occupied, and shipping tonnage sunk have much less applicability to insurgent war than in general war; yet some method must be devised to accurately evaluate progress. The measurement of success in the populace and resources control program is a major step forward in resolving this problem. By evaluating success in populace and resources control, the number of restrictive measures can be kept to a minimum, and timely changes in the program can be made to cope with variations in the levels of insurgent activity.

The composition of a successful populace and resources control program was established by a review of the populace and resources control techniques used during the insurgencies that occured in Greece, Malaya, Algeria, and the Philippines. Each component of the successful program was examined to determine parameters and indicators of success. A measurement system employing the parameters and indicators was then devised to evaluate progress in each of the elements of the populace and resources control program. The general feasibility of employing the proposed measurement system was examined, and a determination was made of its general applicability in internal defense operations.

A review of insurgencies in Greece, Malaya, Algeria, and the Philippines disclosed the elements of a successful populace and resources control program. These elements are appropriate legislation and regulations; effective law enforcement forces; a framework of security consisting of secured villages, area, and lines of communications; screening and documentation of the populace and detection and elimination of the insurgent interstructure; and the strict control of material resources.

A measurement system to determine success consists of collecting and processing functions. Data on the current status and accomplishments of control activities of each element of the populace and resources control program are collected at village and district levels. The data are then consolidated and collated at intervening and national levels. Comparisons of current information with information from previous reports are made to determine progress and trends in the populace and resources control program. The trends and changes determined by the measurement system illustrate the direction of progress in populace and resources control. When a careful evaluation is made of the success in the various elements of the program, deficiencies and problem areas become apparent. Action can then be taken to resolve the problems or to increase emphasis on deficient aspects. The responsible officials are advised on the success of the component parts of the program and can then make timely adjustments in populace and resources control techniques to cope with various levels of insurgent activity.

The feasibility of the measurement system is determined largely by the nature and extent of the populace and resources control program, the availability and reliability of data, and the adequacy of competent personnel to collect and process the data. The measurement system requires detailed and accurate data and imposes a requirement for detailed recordkeeping at village and district levels. However, the required skill level of personnel does not exceed that necessary for routine administrative functions.

Measurement of success is an essential part of an effective populace and resources control program. By evaluating all aspects of the program through the use of the proposed measurement system, only those restrictive controls necessary need be imposed, and maximum effectiveness of populace and resources control forces can be achieved. Information on the effectiveness of populace and resources control activities and problem areas will be made readily available to the officials in charge, allowing them to direct the program more efficiently. Systematic measurement of success will provide a valuable tool to the internal defense operator by focusing attention to aspects that need improvement and assisting in the overall evaluation of the success of internal defense.

51. ROAD DIVISION LOGISTICS MANAGEMENT TRAINING -- IS IT ADEQUATE?, by LTC Tom H. Brain, USA, 84 p.

During the period from 1962 to 1964, the United States Army reorganized its combat divisions under the ROAD concept. The ROAD concept is one of a fixed base composed of control and combat support units to which are attached varying numbers of maneuver and combat service support units. In this way, the ROAD infantry, mechanized, and armored divisions are formed. Along with

this flexible organization is the concept of functionalized combat service support. This thesis investigates the adequacy of the United States Army system of officer education to provide trained key logisticians for the ROAD division.

The problem is approached in three phases. Phase 1 examines the ROAD organizational structure, identifies the key ROAD logisticians, and determines the degree of technical expertise which is available at each staff echelon within the division. In Phase 2 the scope of logistic knowledge which the key ROAD logistician requires is determined in seven functional areas of logistics. In Phase 3 the logistic training as presented at the branch schools and the U.S. Army Command and General Staff College is studied.

In Chapter II the key ROAD logisticians are identified as the assistant division commander for support, the support command commander, and the G4. The role of specialists within support command is discussed. The specialists are the medical, supply and transport, and maintenance battalion commanders. Other key officers are the engineer, aviation, and signal battalion commanders; however, these specialists have assistants stationed at division headquarters to provide technical advice and assistance to the staff and commander.

Seven functional areas of logistics are identified in Chapter III. Those areas are labor, construction, ammunition, transportation, medical evacuation and hospitalization, supply, and maintenance. In each of these areas, the knowledge requirement of the key ROAD logistician is estimated with due respect to the expertise available at each staff level.

In Chapter IV the logistic management training available within the U.S. Army officer educational system is considered. The logistic direction and content of the branch courses, career courses, and the Command and General Staff College are evaluated. The logistics officer specialist program and various refresher or orientation courses are also evaluated for their impact on the training of a key ROAD logistician.

Chapter V contains the analysis and conclusions of the thesis. It is determined that in the supply and ammunition functional areas, logistic management training is inadequate. In the medical and construction fields, the logistic management training is adequate. If all officers attend the Senior Officers Preventive Maintenance Course at Fort Knox prior to becoming key ROAD logisticians, the training in the maintenance field would be adequate. However, if only the officer taining through USACGSC level is considered, the logistic management training in the maintenance area is inadequate.

Although recommendations to resolve the problem which was investigated are beyond the stated purpose of the thesis, the author concludes a chapter of recommended steps to improve the adequacy of logistics management training. There are two series of recommendations presented.

The first sequence includes seven specific steps which could improve the training adequacy and which are supported by facts as presented in the initial chapters of the thesis. These steps include deepening the logistic coverage at USACGSC, augmenting the staff of the division G4 with two technical service field grade officers, initiating a four-week course at Fort Lee, Virginia in ROAD division logistic instruction, augmenting the division support command staff with technical service officers, directing the assignment of career logisticians as DISCOM commanders, and increasing the logistics coverage at branch career courses to 10 percent of the total course.

Because the thesis research developed concepts which were pertinent to the subject but were of a larger scop than that of ROAD division logistics training, the author included additional recommendations which are suggested as starting points for further research in this subject. The second sequence of recommendations include establishing a field army logistics course to cover all phases of functionalized combat service support for field army logisticians, preparing an Army subject schedule for use in orienting newly assigned commanders and logistical personnel in the fundamentals of combat service support, initiating a branch immaterial logistics familiarization course, teaching a Senior Officer Combat Service Support Logistic Refresher Course, distributing an Infantry School publication which concerns the ROAD division logistic system on an Army-wide basis, and recommending that a DA team be organized to tour CONUS and overseas theaters to emphasize the current problems and concepts of materiel readiness and logistics management.

52. NONMATERIEL STANDARDIZATION KEYSTONE TO SUCCESSFUL JOINT AND COMBINED OPERATIONS, by LTC E. L. Cummings, USA, 125 p.

This thesis explores a subject which should be of vital concern to every officer. In a day when joint and combined operations are commonplace, the ability to work effectively with the other services and with the forces of other nations is of utmost importance. Nonmateriel standardization provides the common procedures, methods, and techniques which make this possible. It is hoped that this document will be of some use in pointing up the pitfalls which await when such a standardization program is not in effect, and, even more important, the continuing, indeed, the increasing need for such a standardization effort.

The methodology used was verification by precedent. First, the historical record of World Wars I and II, Korea, and Vietnam was examined. The record shows not only that the use of joint and combined operations in war is increasing, but that the use of agreed procedures, methods, and techniques is absolutely required if such operations are to be conducted effectively. From the historical record, six areas were isolated in which standardization was necessary. Next, the current program for standardization was reviewed to determine how it functions and if it covers adequately the six identified areas. Finally, the process by which standardization is texted was studied to determine if this testing insures that standardization agreements actually contribute to successful joint and combined operations.

In the historical record, only selected parts of each war could be studied. The six areas which were identified for detailed attention were unity of command, air support, logistics, identification of forces, civil affairs and psychological operations, and general operational procedures.

By the accepted definition, unity of command does not fall within the parameters of standardization. However, because unity of command is needed if adequate standardization is to be achieved, it was included as one of the six areas selected. Trends which were developed in the historical record showed clearly that agreement on the procedures to be used in each of these six areas was required for successful joint and combined operations. Lack of such agreement would surely lead to difficulties as has happened in the past.

Since World War I, the need for the military services of the United States to operate closely together in joint operations was apparent. However, the lessons learned in this war were largely forgotten when peace came and had to be relearned at great cost. Not until after World War II again showed the urgent requirement for joint operations was a large scale effort made to reach complete agreement. In 1958, the Congress spelled out in detail the need for a land, naval, and air force team. This direction necessitated procedures to permit the services to operate together, as well as a method which would provide unity of command.

Consequently, Unified Action Armed Forces was prepared and issued as JCS Pub 2. This document delineates the service responsibilities in the preparation of doctrine and provides for the establishment of unified and specified commands. Joint Chiefs of Staff Standardization Field Panels have also been organized to investigate selected fields to determine what interservice standardization is required.

Unity of command for joint operations has been established and an agreed system for providing air support is in effect. In spite of many improvements, additional effort is needed in the areas of logistics, identification of forces, civil affairs and psychological operations, and general operational procedures. In short, although considerable progress has been made, much more work is required to reach the optimum level of standardization which would permit the most efficient use of the land, naval, and air force team in joint operations.

In the combined arena, attention was focused on the North Atlantic Treaty Organization (NATO). The South-East Asia Treaty Organization (SEATO), the Central Treaty Organization (CENTO), the Inter-American Defense Board, the Tripartite (American - British - Canadian Armies) (ABC) and the Quadrapartite (American - British - Canadian - Australian) (ABCA) programs were also looked at briefly. In all these international bodies, standardization occupies a key position. The need to achieve the maximum interoperability of the forces concerned has been recognized, and nonmateriel standardization is being pursued to establish, where possible, common doctrine, training, and procedures.

The current NATO standardization program was reviewed in the light of the six areas identified earlier. Unity of command has been established by the NATO command structure. Excellent progress has been made in standardizing an air support system. Progress has also been made in reaching agreement on logistical and civil affairs procedures, but more effort is required in each of these fields.

No agreed procedures for psychological operations have yet been reached, even though the historical record shows they are required. In the type of warfare presently waged in Vietnam, where the political and psycho-social aspects are as important as the military operations, an agreed system is mandatory.

A great deal of work has been done in standardizing general operational procedures. It is here, however, that much more should be done. This is true for two reasons. First, if the day-to-day activities can be standardized, they can become part of the combined standing operating procedures, thereby freeing the staff officer and commander to concentrate on matters which are of primary importance. Secondly, as some agreement is reached in this area, more areas for agreement become possible. It is in the area of general operational procedures that the goal of optimum interoperability of forces can best be achieved.

Once agreement is reached on nonmateriel standardization, it is necessary to determine the suitability of these agreements. This is done by testing in exercises. These exercises not only test the procedures to insure they are satisfactory, but they allow the different forces to work together, thereby increasing understanding. The historical record clearly shows that this understanding is necessary for the most effective cooperation.

It can be concluded that a successful program of nonmateriel standardization will insure the integration of joint and combined forces into a well organized team of land, naval, and air forces. In the world of today, where joint and combined forces are playing an ever-increasing role, such a program of standardization is the keystone of successful joint and combined operations.

53. A DOCTRINE FOR THE CONDUCT OF POPULACE AND RESOURCES CONTROL OPERATIONS BY A ROAD INFANTRY DIVISION, by Major Charles W. Dyke, USA,

The purpose of this study is to develop a more definitive doctrine for the conduct of populace and resources control activities by a ROAD infantry division assigned an internal defense mission. Internal defense is a relatively new term in the United States Army. It was probably coined to supplant the negative tone of the term counterinsurgency with a positive and more accurate descriptive title for the full range of measures taken by government and its allies to free and protect its society from subversion, lawlessness, and insurgency.

To accomplish these tasks, internal defense has three primary programs. Counterguerrilla warfare operations are conducted to destroy a guerrilla element of an insurgency. This is primarily a military responsibility.

Populace and resources control measures are applied to detect and neutralize the insurgency apparatus and operations in the community, to sever population support of the guerrilla, and to provide a secure physical and psychological environment for the population. This is primarily a police responsibility. However, when the insurgent activity exceeds the capabilities of the law enforcement agencies, military forces are employed in populace and resources control operations. Environmental improvement activities, the third major program, is designed to achieve improvement in the social, economic, and political environment from national to community level. Military forces participate in this program through military civic action projects.

These three basic programs are largely dependent on two other national programs. These are intelligence and psychological operations. At the national level, these five programs are coordinated by the National Internal Defense Plan prepared by the central government.

United States assistance efforts are coordinated by the Country Team, composed of senior representatives of each United States government agency in the country. The Country Team is headed by the Ambassador of the Chief of the United States Diplomatic Mission. Membership normally includes the chiefs of the Military Assistance Advisory Group (MAAG), the United States Agency for International Development (USAID), the United States Information Agency's Information Service (USIS), and other agencies that may be operating in the country. The Country Team develops the Country Internal Defense Plan to achieve approved United States objectives and to delineate United States resources required for its accomplishment. As events since 1965 have shown, these resources may include United States ground combat units, to include one or more ROAD infantry divisions.

By examining United States Army doctrine for the conduct of internal defense operations, it was determined that the role of the advisor and of Special Action Forces specially trained to assist a nation prevent or defeat an insurgency was emphasized, and that there was no single expression of doctrine pertaining to the conduct of internal defense operations by the ROAD infantry division. The fragmentation of existing doctrine into statements contained in several field manuals and other publications robs the material of an overall cohesiveness needed to convey fundamental relationships between internal defense programs. The relative merit of each point, the desirable sequence of actions, the priority of tasks are all dependent on the interpretation of each commander. In addition, current doctrine fails to make clear the basic difference between guerrilla warfare waged by irregular forces against the regular military forces of an invading or occupying power and the essentially political, social, and economic struggle of an insurgency.

To develop a more definitive doctrine for the conduct of populace and resources control activities by a ROAD infantry division assigned an internal defense mission, three historical examples of internal defense operations were examined in detail. The examples chosen for study were the actions by the Republic of the Philippines to suppress the HUK Insurgency from 1946 to 1957, the Malayan Emergency from 1948 to 1960, and internal defense operations

in Vietnam from 1945 to 1963 under both the French and, after the 1954 division of the country, President Diem's regime in the South. From the study of each historical example, a set of principles for the conduct of populace and resources control activities was derived. These principles were then synthesized into a set of criteria for use in evaluating current doctrine and the development of a more definitive populace and resources control doctrine for the ROAD infantry division.

In order to properly evaluate current doctrine for populace and resources control activities, it was first necessary to reduce the material available into a single statement. This doctrine does not appear elsewhere in this form, oriented exclusively on internal defense operations.

As a result of the examination of current doctrine by the criteria developed, it was concluded that:

1. The doctrine for the conduct of populace and resources control activities by a ROAD infantry division is adequate as stated in Chapter V of this paper. However, as the material exists in published field manuals, it does not provide an overall, cohesive concept for populace and resources control activities in an internal defense environment.

2. The existence of well defined, clearly understandable statements of doctrine would facilitate the conduct of populace and resources control activities by the ROAD infantry division.

Major recommendations are:

1. United States Army doctrine for the conduct of internal defense operations by a ROAD infantry division, to include the conduct of populace and resources control activities, should be provided the division commander in a single document.

2. Doctrine for the conduct of populace and resources control by a ROAD infantry division should include the following key points:

a. Populace and resources control operations by the ROAD infantry division are emphasized in clear and hold operations.

Clear and hold operations:

(1) Expand outward from a secure base.

(2) Maximize the use of indigenous security forces.

(3) Provide for the early establishment of an intelligence net.

(4) Require unity of effort of all forces involved for success.

(5) Employ psychological operations and consolidation propaganda to promote the cooperation of the populace.

(6) Require that only essential populace and resources control measures which are authorized by the host nation, and which can be enforced, are instituted.

(7) Include civic action programs that stress participation by the populace.

b. The successful conduct of populace and resources control operations requires flexibility.

3. Additional studies should be made to determine what modifications, if any, are necessary to the ROAD infantry division table of organization and equipment to enhance its capability for conducting populace and resources control activities.

54. AUTOMATIC DATA PROCESSING SYSTEMS FOR SELECTING FINAL ALIGNMENTS OF ROADS AND AIRFIELDS AND SCHEDULING AND CONTROLLING ROAD AND AIRFIELD CONSTRUCTION, by Major Gurnie C. Gunter, USA, 154 p.

The Problem and Its Importance. This thesis is an attempt to study and analyze the possibility of automating some of the important aspects of road and airfield planning and construction scheduling so that the engineer can provide better roads and airfields in a shorter period of time and thus enhance the success of combat operations within the theater of operations.

Road and airfield construction is one of the most important missions of engineers in the theater of operations. Good roads and airfields are necessary for the exploitation of succes in battle, for mobility, supply and evacuation. The rapid construction of roads and airfields in the theater of operations is essential.

Methodology Used in Solution. This thesis is divided into six chapters. Chapter I is an introduction of the problem and a thorough discussion of its importance. The next two chapters discuss the current systems for selecting the final alignment of roads and airfields and scheduling and controlling road and airfield construction. These two chapters conclude with a comprehensive analysis of the advantages and disadvantages of the systems discussed. The proposed systems for selecting final alignments and scheduling and controlling road and airfield construction are discussed in a single chapter (Chapter IV) because of similarities in the computer aspects and the advantages and disadvantages of the two proposed systems. Chapter V is devoted to describing how the proposed alignment and scheduling will be operated within the theater of operations and to discussing of the impact of automatic data processing equipment and personnel requirements on implementation of the proposed systems.

Most of the author's research was conducted at Fort Leavenworth and consisted of examining documents pertaining to road and airfield construction and computer hardware and software. The remainder of the research was conducted at the Kansas City District of the Army Corps of Engineers. Research at the Kansas City District consisted of interviews and the study of applicable automatic data processing systems being used by the district.

Analysis of Data and Findings. In the current system for selecting the final alignment for roads and airfields, the engineer is not able to develop trial alignments in sufficient detail to effectively compare the alignments and to select the one that will meet specifications and yet result in the least amount of construction effort.

Engineers in the theater of operations are currently using one of two systems to schedule and control road and airfield construction: the Gantt Bar Chart System and the network analysis system. Both systems contain many calculations that have to be made before the engineer can make satisfactory decisions, and these calculations are currently being performed manually and consume too much of the engineer's time.

The proposed system for selecting the final alignment for roads and airfields allows the engineer to optimize his selection and to do so in far less time than is possible in the current system. The proposed alignment system is also more accurate than the current system.

The proposed system for scheduling and controlling road and airfield construction will allow the engineer to develop and effectively use any size construction schedule. The proposed system also provides the engineer with meaningful reports that will aid in controlling construction and help insure that all road and airfield construction in the theater of operations is efficiently conducted.

Conclusions. The thesis concludes that the proposed system for selecting the final alignment for roads and airfields should be adopted. The utilization of the electronic computer in the selection of a final alignment offers a significant advantage over the manual system presently used in the communications zone.

The thesis further concludes that the proposed computerized system for scheduling and controlling construction should be adopted because it offers a significant advantage over the non-computerized scheduling systems currently used in the communications zone.

In order to implement the proposed systems for selecting the final alignment of roads and airfields and scheduling and controlling road and airfield construction in the communications zone, automatic data processing equipment and personnel trained in the supervision and operation of automatic data processing systems must be made available to the engineer construction brigades in the theater of operations.

55. CONSTRUCTION PLANNING IN THE THEATER OF OPERATIONS, by Major Donald F. Hartman, USA, 195 p.

Past experience has demonstrated that situations may develop which can require a rapid deployment of military forces overseas. In the past, time has not been available to accomplish detailed construction planning needed to provide the requisite logistic and administrative support base. Although current and future developments may reduce the requirements for construction, rapid base development construction will continue to be an important and early requirement. This thesis is devoted to a broad, and somewhat generalized, view of overseas construction as it applies to the Army. The research includes a brief historical sketch of overseas construction and a more complete study of recent construction in South Vietnam. The base development planning process, as portrayed by current doctrine, is investigated along with the peacetime installation master planning and construction programming procedures. Construction planning considerations are reviewed as well as the factors that influence construction execution. Estimating procedures used for general planning and for detailed planning estimates are also reviewed. The specific purpose of this research is to develop a recommended construction planning procedure that will provide a more realistic approach to base development construction planning.

Sources for the research are limited primarily to Army manuals, regulations, and selected studies for doctrinal material. Other data is obtained from historical studies, periodicals, operations reports, and personnel interviews. In addition, data is obtained through questionnaires sent to selected Engineer Officers with recent construction experience in South Vietnam.

Construction requirements in an overseas area are evolved from assigned missions or contingency plans, which are translated into construction requirements through the planning process. Two basic planning processes govern the preparation of construction programs. These are "the base development planning process" which applies primarily to active military operations and "the peacetime installation master planning process."

Currently all military construction is accomplished using essentially peacetime planning and programming procedures. Basically the methods used to determine construction requirements in base development planning and installation master planning are the same. Differences between the two planning procedures exist in responsibilities for planning and approving construction. Future base development doctrine should incorporate the essential elements of peacetime construction planning and programming.

The preparation of a base development plan presupposes the existence of several conditions. These conditions are that a command and staff structure exist, a mission is defined, the area of operations is known, and time exists to accomplish the necessary planning. In both the Dominican Republic deployment and the South Vietnam buildup, the major portion of the base development planning was accomplished concurrently with or after the troop

deployments were completed. After an initially critical period of shortages, the requisite base was created.

Only through adequate contingency planning, which becomes more important in the age of flexible response, can limited construction resources be brought together to provide the supporting base on a timely basis. In contingency planning, the question arises as to how far ahead and in how much detail to plan base development construction. Since base development is a dynamic process, influenced largely by the operational situation that develops, it is difficult to visualize the amount of construction that will be required. At some point a base development plan tends to become invalid if burdened with too much detail. Detailed prior planning is required to provide those critical facilities and improvements needed early in the operation. However, much of the planning for the lower priority work, usually associated with the later stages of base development, can be general.

Based on the research, it is recommended that three distinct categories of base development construction be established. The recommended categories and planning actions can be summarized in the following manner. Category I encompasses that critical construction required to permit entry of a force into an area. Examples of this construction would be airfields and port facilities. Planning would be detailed and based upon firm project siting. Construction forces would be identified by unit, assigned specific construction projects, and maintained in a deployable status. Materials and special equipment would be prestocked or identified for rapid movement to the construction site. Much of this construction could possibly be accomplished prior to a specific need for deployment. Category II construction consists of those facilities required to establish the force in an area. Examples of this construction would be expanded terminal facilities, depots, maintenance facilities, and hospitals. Planning for this construction, which would be quite similar to current base development planning, would include preparation of troop lists, mobilization plans, and plans for procurement and transportation of materials and equipment. Category III construction comprises those facilities and improvements required to sustain a force in an area. Examples are troop cantonment areas, welfare and recreational facilities. Planning would be general, consisting primarily of forecasts of requirements. No detailed design, estimating, or firm site selection would be required. Detailed planning would be accomplished after deployment as routine construction support.

56. A DOCTRINE FOR THE CONDUCT OF PSYCHOLOGICAL OPERATIONS BY U.S. COMBAT FORCES EMPLOYED IN INTERNAL DEFENSE OPERATIONS, by LTC C. K. Hausman, USA, 196 p.

The thesis was designed to analyze and, as appropriate, evolve doctrine for the conduct of psychological operations (PSYOP) by U.S. combat forces employed in internal defense operations. Such doctrine will specifically identify and clarify responsibilities for development of responsive, flexible, and mission-oriented PSYOP. The thrust of the study is oriented at the U.S. Army division level. Constraints encountered are in the isolation and quantification of the "true" measures of PSYOP performance.

The basic methodology is an analysis of historical precedent, the conduct of detailed literary research, the evaluation of historical U.S. force examples as modified by the result of extensive interviews and by modern capabilities and environments, and the synthesis of a doctrinal concept. The first model, the 1st Infantry Division case study in Appendix A, appears to be the first instance in which a U.S. combat unit became engrossed in an internal defense operation of sizeable magnitude. The second model is the USACGSC Subject 2312, "Internal Defense Operations".

The U.S. combat commander assigned an internal defense mission will call for normal staff estimates and concepts, plus an additional one--psychological/political. The essential purpose of the PSYOP concept is to enhance the accomplishment of the mission by exploiting the potential, or actual psychological implications and effects of the division's operations. The division PSYOP staff officer and attached units perform assigned missions in a manner similar to other staff members and attached or supporting specialized units.

The doctrine evolved is derived from an evaluation of 14 points prescribed for a general or limited war, a cold war, an insurgent war, and consolidation operations. These points are: (1) Minimum intelligence; (2) PSYOP theme; (3) PSYOP media; (4) Troop orientation; (5) PSYOP effectiveness; (6) Control of propaganda release; (7) Support of host country PSYOP; (8) Support of USIS; (9) Explanation and capitalization on U.S. presence; (10) Informing of commanders of insurgent propaganda; (11) Supporting of tactical counter-guerrilla operations; (12) Supporting of an amnesty program; (13) Supporting of a psychological action; (14) PSYOP support for securing the LOC and base. Analysis of these points reveals that in all but one case there is application with some modification to the internal defense environment.

Some significant factors constantly mentioned as relevant to internal defense PSYOP do not form the basis for doctrine. These factors are command emphasis, professional capabilities, impact of noncombatant casualties, PSYOP campaign plans, techniques of media usage, and the need for SOP operations.

Some conclusions are reached after evaluating these factors: (1) Command emphasis is vital to the successful accomplishment of a unit's PSYOP mission and varies directly with results achieved, (2) Capabilities of PSYOP personnel and their ability to employ proper techniques are directly reflected in the product and affect results, (3) Adverse psychological effect on the population from noncombatant casualties can be partially countered by a predetermined rapid response, (4) Divisions should prepare detailed psychological operations plans (PSYOPLANS) to implement higher level PSYOP campaigns and programs and provide detailed thematic guidelines to subordinate commands, (5) Use of a PSYOP/CA checklist technique for units subordinate to a division would materially assist in the preparation of an effective program, (6) The last principle of doctrine realized from this evaluation is perhaps most important. It is to standardize methods of PSYOP/CA doctrine application.

An evaluation of the doctrine by using the models results in supporting the validity of the 14 points adopted and reveals some very interesting conclusions. Some of these conclusions are listed under one of two models for PSYOP.

First model. The lack of language qualified PSYOP personnel hampers proper PSYOP thematic development. The PSYOP approach to simple people must have a fundamentally simple appeal with ease of retention. One should leave sophistication to the development phase. The PSYOP approaches developed during initial phase of internal defense operations must be sufficiently flexible to be followed consistently and constantly regardless of the current fortunes of war. PSYOP lines of persuasion used in hamlet/village level operations must be designed to be disseminated through "key communications" and capable of affecting emotion by creating an atmosphere of faith and conviction. Aerial loudspeaker missions and leaflet flights must be coordinated with tactical fire support elements. Combined Community Relations Committees consisting of officers from the U.S. base camp, host country officials, and appropriate advisors provide a forum for resolution of problems in communities contiguous to the camp. The use of PSYOP in developing popular support for an underdeveloped host government is difficult at best and made next to impossible when active military operations are being conducted in the midst of the people. For PSYOP to succeed in winning popular support, the host government's regular forces and the local militia must be motivated and determined to win.

Second model. PSYOP is a weapon system oriented on the principle of the offensive. Narrow the focus, it can exploit; broaden the scope, it can envelope. An optimum U.S. PSYOP cellular structure for support of a U.S. infantry division engaged in an internal defense operation is one (1) team HA habitually attached, four (4) teams HB in direct support (collocated), one (1) team HC, and one (1) team HD in general support (collocation optional). During internal defense operations, commanders make a task staff section responsible for a PSYOP that estimate the psychological and political situation of both friend and foe. The complex task of maintaining a current grasp of the local situation while planning a PSYOP campaign within the multitude of essential guidance requires a degree of planning and organization resembling a division level coordinated attack. The division PSYOP officers in many instances perform the "Devil's advocate" function for the command by expressing the political or psychological implications or effects of envisioned operations. U.S. combat forces operating in a major host government subdivision (provinces) should establish a liaison office for psychological/political activities.

57. THE BOER WAR: ABERRATION OR OBJECT LESSON?, by Major S. H. Hyman, USA, 122 p.

This study is of Great Britain's experience in the Boer War with emphasis on the perspective it provides to the complexities of present United States limited war involvement. Inquiry to date, aimed at gaining such historical perspective on the challenge of today's Vietnam type conflicts, has been concentrated on post-World War II, Communist inspired and/or supported insurgencies such as the Philippine, Greek, Indo-Chinese, and Malayan experiences. These examples, extremely valuable to a point, give very little information on the unique plight of a first rate power against a semi-sophisticated enemy in a mixed conventional/guerrilla environment on battlefields many thousands of miles from its home front. The Boer War of

1899-1902 does share these features as well as a number of other key situational circumstances with the current US plight and is therefore worthy of analysis.

This examination is done primarily through many books left by both Boer and British participants in the war and eyewitnesses to it. A substantial contribution is made by the published Minutes of Evidence of the many Royal Commissions constituted to study various aspects of the war during and immediately following the hostilities. Methodology employed is a more or less chronological approach that identifies and appraises pertinent events surrounding the Boer War to discover salient points and relationships not previously recognized to have significance for limited war involvements in the current context.

The roots of Anglo-Boer war in 1899 go back before the Great Treks of the 1830's. Conflict broke out in 1881, but the British, dealing from weakness in such operations, on that occasion backed down. The fundamental issue of who should have hegemony over South Africa remained unsolved and became greatly exacerbated in the 1890's with the influx of large numbers of primarily British "Uitlanders" to the mining areas of the Boer Republics of The Orange Free State and The Transvaal. These Uitlanders were economically and politically exploited by the Boers. Incident led to confrontation and confrontation to crisis. Culmination occurred in the Jameson Raid of December 1895--an attempt by British Cape Colony elements to help the Uitlanders overthrow the Boer government from within. It was a fiasco, but it solidified feelings on both sides. Relations worsened at an increasing rate. By 12 October 1899 President Kruger of the Transvaal felt impelled to send his commandos over the border into Natal.

Unfortunately for the Boer cause in 1899, they did not strike as decisively as they did in 1881. Instead they early became involved in executing sieges of British garrisons at Mafeking, Ladysmith, and Kimberley. No seige was successful and all served to tie up large numbers of Boer mounted infantry. These sieges provided the necessary time needed for a British build up. In the first months of the war, British employment of these forces was a lesson in how NOT to fight a limited war. The favored tactic was a frontal attack against an unknown enemy over unfamiliar ground. Though there were some victories the overall result was debacle upon debacle. Attacks became chaotic and attempts at extrication became catastrophic. The extent of the losses was so apparent that London replaced Sir Redvers Buller with Lord Roberts as the Commander-in-Chief in South Africa. Roberts significantly changed the British approach. Using the great mobility offered by the open terrain, he successfully executed a great flank march in the west to relieve Kimberley and then took the Orange Free State capital of Bloemfontein and the Transvaal capital of Pretoria. He crossed the Vaal River, took Johannesberg, and thrust to Pretoria. It was a great victory for Roberts and apparently ended the war. The Boers, however, turned to guerrilla warfare. Roberts' successor, Lord Kitchener was at first stymied by the guerrilla tactics of his enemy. Simply trying to run the Boer down proved futile. He developed the "blockhouse system". Lines of blockhouses were layed out first

along key lines of communication, then across the open country. Construction was done quickly by crews using prefabricated, galvanized iron sections. When completed these constituted the flank protection and/or an anvil for giant cross country sweeps.

Throughout these events in the theatre of operations, great controversy raged in England over England's involvement in the war and the conduct of the war. Criticisms were made of the tactical blunderings, the concentration camps involving the incarceration and maltreatment of tens of thousands of Boer women and children, and the poor treatment received by British wounded. These domestic furors were more than equalled by similar attacks on British policy from press and public around the globe

The positive tactical lessons of this study of the Boer War applicable to the current context are few although this war does provide some excellent illustrations of the significance of having defined objectives and having mobility on the battlefield. Important within the tactical realm, however, is Kitchener's unique and successful "blockhouse system", considered adaptable to some degree to a modern guerrilla challenge.

Aside from the tactical considerations, the Boer War reveals that, first and foremost, despite their many complexities, such wars can be won by a great power willing to expend the necessary cost in money and manpower. The Boer War sheds additional interesting light on a few key areas. On the question of population control within a theatre of operations, the Boer War points up the deep and unexpectedly negative impact of such measure as an aftermath of war. Insight can be gotten also from the British experience with their own internal dissension in England. Perhaps most significantly is that such dissension often leads to needed improvements. Conversely, no delimitation whatever on the right to dissent is necessary for the successful prosecution of such a war.

58. THE IMPACT OF LAND REFORM ON INTERNAL DEFENSE IN SOUTHEAST ASIA, by Major Homer Johnstone, USA, 90 p.

Land reform is generally accepted as an important function in the internal development equation. Widely hailed in concept, it nonetheless has been surprisingly limited in practice. This thesis examines land reform and insurgency in three Southeast Asian countries: Malaya, the Philippines, and South Vietnam.

Since no substantive works concentrating on land reform in Southeast Asia are available, research into the subject area covered the entire spectrum of sources: government and private reports, books, and periodicals. From these many sources, the fragments of the history of land reform in each country can be drawn and pieced together. Land reform in underdeveloped countries can be first defined and categorized into tenancy protection, title transfer, or agricultural improvement. The Communist approach to agrarian reform is developed in the thesis, and the land reform philosophy is found to occupy a high place within the Marxist scale of revolutionary values.

The history of the Malayan Emergency and the patterns of agricultural title and tenure are set forth. In analyzing the cause and effect relationships of the insurgency and the successes or failures of British response, particular attention is paid to the agrarian and land-related aspects. Agrarian dissidence has never been particularly strong in Malaya. Government programs of agricultural modernization and improvement have taken place. Their preventive roles in internal development are discussed. The Briggs Resettlement Plan is discussed, as well as the excellent British organization necessary to carry out effective resettlement.

Contrary to the situation in Malaya in which agrarian discontent was never widespread, the Republic of the Philippines has a history of agricultural dissidence dating from the late 1800's. This study presents a history of Philippine land reform legislation and discusses the reasons for the relative impotence of such legislation. The Hukbalahap insurgency has definite roots in agricultural inequities. An analysis of the tenure security problem facing the Philippine peasant reinforces this fact. The government's response and its successes in internal defense actions were greatly influenced by one man--Ramon Magsaysay. His presence and his programs had a most profound effect on the insurgency. The land reform, psychological aspects of his Economic Development Corps and its significance to the total internal defense effort are detailed in the thesis.

Classic land reform has been attempted on a much larger scale in Vietnam than in either Malaya or the Philippines. Up to the present, however, such attempts have borne little fruit. The thesis presents in detail the history of land reform efforts in South Vietnam, starting with the Viet-Minh reforms immediately following the French collapse running through turbulent years and changing regimes, and ending with the present. In addition to the legislated and decreed reforms in tenure security and title transfer, the land reform aspects of the various resettlement and pacification schemes cannot be overlooked. In the description of each scheme and land reform measure, the reasons for success or lack of success are presented.

In conclusion, the effects of land reform measures in each of the three countries are summarized. General conclusions are drawn from the collective experiences in all three countries, and the role of land reform within the total orchestration of internal defense is postulated. If used as the adhesive to bond the people to their government, land reform is without peer. Equally necessary for such a union, however, are the foundation blocks of security, justice, and effective government. To apply any one element without the others in internal defense would be to accomplish little or nothing at all.

59. A STUDY OF PROGRAMMED INSTRUCTION, by LTC J. E. O'Brien, USA, 123 p.

Since the early 1950's, programed instruction has been adopted for use in a large number of disciplines. Along with the other military services, the United States Army has recognized that programed instruction can be used advantageously in many training situations. The U.S. Continental Army Command (USCONARC) has directed that Army schools under its command review the courses taught with the view to selecting and programing those which appear to be adaptable to a programed format.

At the U.S. Army Command and General Staff College, one portion of the Automatic Data Processing elective is programed. However, no other programed instruction is used. It would appear that more subjects, or courses, at the College could be programed. To determine whether any or all courses at the College should be programed requires a detailed inquiry, not only into the possibility of adapting the subject material into a program, but also into the costs in time, materials, and facilities. Such an inquiry is beyond the scope of this thesis.

The purpose of this thesis is to determine whether such an inquiry should be made. The procedure followed was to select a single lesson from among the many taught at the College, put it into a programed instruction format, present the programed lesson to a representative group of students, and measure the effectiveness of the programed lesson compared to the same lesson presented to other students by conventional methods.

The introductory portion of the subcourse "Airmobile Operations" was the lesson selected. It was programed in a linear format containing 172 frames. In addition, four sketch maps and the College-issued Advance Sheet were used for the lesson.

The lesson was presented to students at the U.S. Army Reserve School, Topeka, Kansas. In the author-designed criterion test administered immediately following the lesson, the group taught by the programed lesson made an average of eight errors each compared to 12.5 errors made by the group taught by the conventional method. Since there were only four students in each group, the better scores made by the test group cannot be taken as proof of the superiority of programed instruction.

The experimental lesson did prove, however, that lessons of the type selected are adaptable to being programed. Learning did occur and possibly to a greater extent than with the conventional method. From these preliminary results, it is suggested that a further and broader investigation into the feasibility of using programed instruction at the U.S. Army Command and General Staff College is warranted.

60. RECOMMENDATIONS FOR INITIATION AND ADMINISTRATION OF TROOP CONSTRUCTION IN THE LIMITED WAR THEATER OF OPERATION, by Major D. M. O'Shei, USA, 148 p.

This thesis deals with the administration of troop construction in the limited war theater of operations. It is especially important that lead time involved in conducting such operations be reduced to a minimum. Recent history has demonstrated that time works against the United States in a limited war. Political pressures generated by adverse public opinion build up as the war is prolonged forcing a retarded effort in the fulfillment of U.S. goals and objectives. The time required to construct logistics bases for the forces employed represents a significant portion of the lead time involved in mobilizing a force for combat. If the time required for the employment of forces can be significantly reduced, public opinion may be pacified, political pressure reduced, and governmental goals and objectives advanced. The framework within which the discussion is conducted is the limited war situation.

The exact delineation between limited wars and counterinsurgency or internal defense operations is not considered to be critical. The nature of such conflicts is not considered to be critical. The nature of such conflicts is characterized as the following: (1) no substantial change in the size or composition of the Corps of Engineers, (2) no general mobilization in the United States, (3) an off-shore theater of operations, (4) an underdeveloped theater of operations with primitive logistics, transport, and communications facilities, (5) no defined combat or communications zones, and, (6) no waiver of the normal MCA controls.

The current doctrine for theater of operations construction support, embodied in the TASTA-70 concepts, is considered to contain certain fundamental weaknesses when applied to a limited war situation. To the extent that it is valid, the TASTA-70 concept is for the operations of a terrain oriented, large land mass, field army. It lacks a built-in capability for staffing joint construction requirements. It demands more engineer troops than will reasonably be available. It fragments engineering functions between combat support and combat service support such that there is a lack of flexibility. This lack of flexibility makes it difficult to provide the central management of construction efforts required by MCA procedures. The difficulties incident to operating in a divided communications zone have not been anticipated by the organizational viewpoint. A centralized ADPS operation does not lend itself to subdivision flexible construction operations.

The troop construction program evolved in Vietnam was successful in obviating or overcoming many of the problem areas listed above. This was, however, largely a result of the skill, imagination, and dedicated work of the personnel assigned rather than a matter of application of doctrine. As a result, much of the planning and organization for construction was conducted concurrently with operations. This resulted in delays in getting the program fully underway and led to subsequent inefficiencies. The major criticisms of the Vietnam operation are: (1) lack of early planning, (2) failure to establish central control at the outset, (3) oversophisticated construction standards, and, (4) deficiencies in the Engineer Functional Components System.

Seven positive recommendations to improve the Army's ability to support limited war operations are made. The first is a complete revision of the existing, and very loose, system of developing standards and authorizations for construction. Very specific construction authorization lists should be made that are similar to tables of organization and equipment. This, as well as eliminating overbuilding, would define requirements to the extent that boundary conditions for future planning could be established.

The second is extension of the Engineer Functional Components System to include other than temperate climate design. This should be accompanied by a thorough modernization of designs and materials employed. Liberal use should be made of prefabricated facilities.

The third is establishment of an agency, at the Office of the Chief of Engineers, to be charged with the preparation of base development plans to support all contingencies. Its objective would be to develop plans that would require only site adaptation to specific events.

The fourth is that in support of the base development plans above and an improved Engineer Functional Components System, the Army Materiel Command should make advance procurement of long lead time construction materials required. These stocks should be pre-positioned to best support the contingencies.

The fifth is that greater recognition should be given to the requirements for timely establishment of joint control of theater of operations construction. Force development planners should resist the temptation to build the management structure from the bottom up. Directive authority over all construction in a theater should be vested in a construction agency at theater level.

The sixth is that an engineer element should be co-established with the theater army headquarters and given operational control over all units significantly engaged in MCA construction. This same element should control the OMA construction and repair and utilities (R&U) functions in the theater.

The seventh is that the engineer group headquarters should be tailored to perform both combat support and construction missions. The designation of a "combat" or "construction" group is meaningless and should be eliminated.

61. COMMAND STRUCTURE FOR SUPERVISION OF ARMY SERVICE SCHOOLS, by LTC Oscar Gibson Price, Jr., USA, 79 p.

Through research, inquiry, and analysis of alternatives this study reveals the optimum command structure for supervision of Army service schools in the Continental United States.

U.S. Continental Army Command today commanding 26 Army service schools is the result of evolution. Prior to World War II, chiefs of arms and services commanded the service schools of their respective branches. World

War II saw the end of the combat arms branch chiefs and a forerunner of USCONARC in charge of the combat arms schools. The 1962 reorganization also established U.S. Army Combat Developments Command. Department of the Army tasked this new major field command with answering three questions: (1) how should the Army fight?; (2) how should the Army be equipped?; and, (3) how should the Army be organized? With the division of the branch chiefs functions among several agencies, the job of formulating doctrine went to U.S. Army Combat Developments Command and the task of teaching that doctrine went to U.S. Continental Army Command.

The desirable characteristics of an organization to command the schools are (1) a consolidation of the responsibilities for individual and unit training; (2) a coordination of doctrinal formulation in an agency directly responsive to Headquarters, Department of the Army; (3) a school participation in formulation of doctrine; (4) a workable span of control provided; (5) a unity of command in the management of resources to insure that schools have the means to carry out assigned tasks; and, (6) the organization be economical, i.e., provide efficiency with minimal personnel space additions and new construction. Consolidation of the responsibility for individual and unit training is not attainable below the Chief of Staff, U.S. Army, because unit training takes place in all units not in combat.

Six alternative organizational patterns are considered. (1) Continue the present organization because it accomplishes the mission economically. Headquarters, U.S. Continental Army Command, is organized to partially compensate for the large span of control of the command. (2) Adopt all recommendations of the Haines Board. (3) In addition to adopting all recommendations of the Haines Board, use intermediate headquarters between U.S. Continental Army Command to reduce the span of control. (4) Establish a separate school command, similar to that used by the Air Force and Marine Corps. (5) Adopt branch centers as proposed by the Haines Board, bringing both the branch combat developments agency and the branch school under a single commander. Assign the centers to U.S. Army Combat Developments Command, utilizing their intermediate headquarters to control branch centers. (6) Adopt the same as alternative five, except Combat Developments Command be assigned to U.S. Continental Army Command. The last alternative is selected as the optimum. Its adoption is recommended.

62. MARXISTS AND MANDARINES: THE THOUGHTS OF CHAIRMAN MAO TSE-TUNG REVISITED, by Major H. G. Summers, Jr., USA, 129 p.

This paper traces the career of Mao Tse-Tung from his entrance into primary school in 1901 until the present date. Particular emphasis is given to the historical, cultural, and philosophical factors that influenced his development. The cultural disintegration of China during Mao's formative years is highlighted, and the influences that caused him to join the Chinese Communist Party in 1921 are explored.

About 1925, the Chinese Communist Party split into two factions. One faction, labeled "Marxist" for east of identification, controlled the Party from its birth in 1921 until 1935. It is composed primarily of Western

trained, urban oriented Communists who seek to develop China along the lines of the Soviet Union. This faction is currently headed by Liu Shao-ch'i, the President of the Chinese People's Republic. The other faction "Mandarin", has controlled the Party since 1935 when Chiang Kai-shek's victories over the urban Communists forced them to turn to the peasant-oriented Communist for support. Headed by Mao Tse-tung, this faction bases its ideologies on traditional Chinese culture and has as its goal the Ta T'ung, the Utopia conceived in 1884 by the Confucian reformer, K'ang Yu-wei. Since the ideologies of this faction are almost unknown in the West, the majority of the emphasis of this paper is on their historical and philosophical development.

An analysis is made of the current attempt to establish a new orthodoxy within China that uses the "Thoughts of Chairman Mao Tse-tung" as its basis. These attempts are traced from their inception during the Rectification Campaign of 1942 to the Red Guard Movement of 1966. Significant events of the Great Proletarian Cultural Revolution are examined, and some tentative conclusions are drawn as to the real power structure within China today.

The importance of culture to the Chinese is emphasized throughout the paper. The impact of Western "cultural imperialism" is brought out. The ancient traditional revolutionary themes of Imperial China--land reform, the Mandate of Heaven, ethnocentrism, and beliefs alien to the power holder--are examined in detail. These four themes, rooted in cultural realities, have proven effective for thousands of years. They are not new; they are not novel; they are not particularly "communistic." They are, however, distinctively Chinese. They are effective today because the underlying issues have not substantially changed in East Asia.

Six salient points of military interest are developed: the Chinese concepts of individualism, ideological control, guerrilla warfare strategies, cultural conquest, the practicality of the impossible, and the use of psychological warfare.

Throughout the paper, the necessity for understanding contemporary Chinese thought and Chinese practice from a Chinese viewpoint rather than a western viewpoint is constantly stressed. Such a viewpoint is central to a true understanding of modern China.

63. A STUDY TO EVALUATE FACTORS INVOLVED IN RETENTION OF MEDICAL OFFICERS IN THE MILITARY SERVICE, by Major W. P. Winkler, USA, 234 p.

The purpose of the study is to more clearly outline the various factors involved in retention of physicians in the military service. In January, 1968, a questionnaire was sent to 1000 Regular Army physicians selected at random from a roster of all medical officers on active duty as of 31 July 1966. Selection was limited to officers in grade of captain, major, and lieutenant colonel and included proportionate numbers of those who have resigned or retired. The 738 questionnaires returned represented a 75.7 percent response. The data were analyzed to determine (1) the influence of

certain career experiences; (2) the relative importance of selected career for leaving the military service; (3) the significance of selected reasons for remaining in the service; and, (4) the value of certain features designed to promote the retention of physicians which were incorporated into a hypothetical military medical system.

It is concluded that problems relating to income continue to be the principal causes for leaving the military service. In addition to inadequate pay and inadequate housing, the common doubt concerning the ability to provide for the future education of one's children is a significant problem. The threat of a possible command or administrative assignment is considered an important or major cause for leaving the service by many physicians.

The reason most often cited for remaining in the service is retirement benefits. The character of the practice of medicine in the Army is a strong inducement for the physician to remain. However, the most potent force in promoting retention of medical officers in medical service is the experience which increases an identification of the physician with the Army and its goals.

64. INDONESIA'S NEW ORDER AND U.S. OBJECTIVES, by Major George K. Withers, Jr., USA, 97 p.

The purpose of this paper is to determine the significance to the United States of the abortive coup d'etat of 30 September 1965 in Indonesia. The thesis initially undertakes an examination of the strategic importance of Indonesia, primarily considering United States objectives in Asia.

Prior to the September 30 (1965) Movement, Indonesia politically tended toward Communism. Her principal friend seemed to be Communist China. Her most active and best organized domestic political party was the Communist Party of Indonesia (PKI). The assassination of six army generals initiated a chain of events which included extirpation of the PKI, suspension of relations between Indonesia and Red China, the ending of the "confrontation" with Malaysia, and the political demise of President Sukarno.

The central chapter detailedly examines the coup d'etat. It starts with the forewarning of conflict, gives a vivid picture of the coup, discusses the destruction of the PKI and concludes with the fall of Sukarno and the emersion of the New Order.

The New Order in Indonesia is attempting to overcome years of political meandering and economic chaos and lead Indonesia to domestic stability and development and friendly relations with other nations. The objectives of the New Order coincide with those of the United States. However, Indonesia remains sensitive to foreign interference, and her foreign policy includes independence from external influence and nonalignment internationally.

In conclusion, it may be seen that the United States and Indonesia now share common objectives. These objects include (1) the security of Indonesia from external domination; (2) the development of political and economic stability for Indonesia; and, (3) the friendship of Indonesia with other nations

of Asia. The United States should exercise care in its relations with Indonesia to avoid exacerbation of old antagonisms and present sensitivities. Our government should not expect Indonesia to become an ally in the Cold War. Indonesia's foreign policy can be expected to remain one of independence from foreign control of any kind and nonalignment in the Cold War.

65. THE ALTMARK INCIDENT AND HITLER'S DECISION TO INVADE NORWAY: A RE-APPRAISAL, by LTC James H. Bremer, USA, 126 p.

In February 1940 First Lord of the Admiralty Winston Churchill ordered the seizure of a German ship, the Altmark, in neutral Norwegian waters. Some historians have implied that this incident greatly influenced the subsequent decision of Reichsfuehrer Adolf Hitler to carry out the invasion of Norway. The purpose of this thesis is to determine the true historical significance of the Altmark incident. What part did the incident play in Hitler's decision? What would have happened if there had been no Altmark incident? Was Hitler's decision strategically correct? Was Churchill's order wise? These are the questions the author seeks to answer.

Following the defeat of Poland in 1939 the Allies, apprehensive of Germany's strength on land and in the air, adopted the strategic defensive and established a sea blockade with their superior naval power. The territorial waters of Norway, because of their location and Norway's status as a neutral, provided Germany with a loophole in the blockade and an all-season access route to her prime source of iron ore located in northern Sweden. Churchill realized that if the Allies could cut off Germany's supply of this essential raw material, it could well prove decisive for the course of the war. He urged that naval action be taken to deny Germany the use of Norwegian waters. The British Cabinet, however, refused to sanction violation of Norway's neutrality.

When, in December, Finland appealed for help in repelling the attack of the Soviet Union, it was immediately obvious to both sides that the only possible route for a relief expedition lay through the Norwegian port of Narvik and the Swedish ore-fields. Hitler received a warning from Vidkun Quisling, a Norwegian political leader, that the British were planning a landing in Norway. The Commander-in-Chief of the German Navy, Grand Admiral Erich Raeder, cautioned him on the importance of Norway. Thereupon, Hitler ordered a study of the military possibilities of an invasion of Norway. The only result of the study ordered by Hitler was the establishment of a planning staff in Berlin. Shortly thereafter, the Allies began preparations for an expeditionary force ostensibly to aid the Finns, but whose main purpose was to occupy the Swedish ore-fields. By the time the Altmark incident took place on 16 February, the Allies having completed their planning, earmarked troop units, started training, and established 13 March as the tentative departure date for their expedition, were far ahead of the Germans.

Hitler was furious when he learned that the British had deliberately boarded a German ship in neutral waters only to liberate some three hundred

prisoners. Immediately Hitler pushed preparations for a military action in Norway, speaking personally to its planners. He directed that troops be put in readiness and that the ships be properly equipped. He appointed a commander to take charge of the preparations and move his staff to Berlin. He asked that progress reports be made every other day. But significantly he did not establish a date for the operation to begin. Even on 1 March the directive he signed ordered only the preparations of the operations. It was not until 3 March that he seems to have decided to invade Norway. On that date, probably as a result of the Allies having delivered notes to the Governments of Sweden and Norway the previous day stating their intention to send troops to Finland's aid on 20 March, Hitler insisted that troop movements begin at once and that landings be made in Norway as soon as possible, hopefully by 17 March.

On 13 March the Finns accepted the Russian's terms, and, for lack of a pretext, both sides temporarily cancelled their plans to land in Norway. French public opinion, outraged over the failure to effectively support Finland, forced the Government to resign. A new government under Paul Reynaud, its Premier, proposed a more vigorous prosecution of the war to his English allies. On 27 March, despite the lack of a pretext, Hitler approved Raeder's recommendation that the Norwegian operation be carried out. The next day the Allies decided to mine the Norwegian waters, hoping that this would provoke a German reaction and justify the landing of an expeditionary force already in readiness.

The British chose 8 April for their minelaying operation, and the Germans chose 9 April for their landing. On 7 April as the German main body sailed, the British landing force was embarking at ports in Scotland. That same day the Royal Air Force spotted the movement of the German Fleet, but its radioed warning went unheard, and the Home Fleet sailed too late. The next day a scout plane's report mistakenly caused the Home Fleet to turn off the course which might have resulted in the destruction of the German force destined for Trondheim. Consequently, on 9 April the Germans were able to secure all the major Norwegian ports. The Luftwaffe then drove the Home Fleet from the coasts of southern Norway. The Allies were never able to overcome these initial German successes. Despite later British landings and their ultimate capture of the key port of Narvik, within two months, the campaign for Norway was over.

The Norwegian Campaign assured Germany an ore supply for the remainder of the war, provided naval and air bases for use against Great Britain, and made the Allied blockade much more difficult to enforce. It is believed that if Hitler had not acted when he did, the Allies would have landed in Norway in response to a German reaction, real or imagined, to allied minelaying. It is therefore concluded that Hitler's decision was strategically correct. The Altmark incident did no more than hasten his preparations. Nevertheless, if the Finns had held out longer and the British campaign had begun in March instead of April, the incident might have been decisive for the British. Considered in the light of this study, however, Churchill's decision to seize The Altmark must be judged unwise.

66. BASE DEVELOPMENT FOR CONTINGENCY OPERATIONS: A DOCTRINAL STUDY, by LTC M. C. Cannon, USA, 275 p.

This thesis is designed to examine the United States Army Doctrine on base development in order to determine what changes, if any, are needed in the doctrine contained in FM 100-10 on base development. It deals only with doctrine, and not with details of planning or implementation.

To make this determination, it has been necessary to examine operations and bases outside the continental United States. In order to analyze the historical changes which have occurred in base requirements within the United States Army, a cursory examination has been made of operations in the Mexican War, the Peninsular Campaign of the Civil War, the Cuban campaign during the Spanish-American War, and World War I.

A more detailed examination is made of base requirements needed to support the operations of World War II since much of the current doctrine on amphibious operations and the use of large land-mass armies has evolved from experience gained during this period. Special attention is given to the initial troop deployments in Europe, the build-up of bases in the British Isles, Operations BOLERO, and the base developments in Europe and North Africa for both the amphibious assaults and the rolling operations which followed. The Southwest Pacific area is studied to ascertain the base support planned and provided for the Army and Joint forces committed in the area. The World War II operations, particularly those in the Pacific, introduced the term "base development", while all of the campaigns discussed showed detailed planning for bases to support combat operations. Base development plans were actually prepared to support operations and base development studies were prepared during the planning phases of operations.

Post World War II operations which have involved the United States Army have been used to meet the requirements for development. The world-wide involvement of the Army, usually as part of a joint or combined force, has been examined. Major emphasis has been placed upon the combat operations in Korea and Vietnam. However, cold war and stability operations in Lebanon and the Dominican Republic have also been examined in relationship to base development requirements.

The treaty obligations of the United States and the current methods of supporting these obligations, including exercises conducted to test these support methods, have been discussed. The guidance available for future planning, future employment of the army, and future support concepts have been examined.

The current Joint doctrine and the Army doctrine on base development have been examined to determine if they are in fact doctrine, and if they do support current concepts, derive from the experience of past operations, and provide guidance for the future, both operationally and logistically.

The conclusions of this study are:

1. The current definition of base development is inadequate. It does not cover all the elements which need to be considered in base development. Therefore, base development must be redefined.

2. Current doctrine for the base development planning cycle needs only minor revisions to support future operations.

3. Responsibility for the execution of base development needs to be clarified.

4. Base development can be divided into three parts, and these divisions should be recognized in current doctrine.

a. Initial base development is the establishment of initial bases to support any type of operations. Current doctrine needs only minor revision to support this part of base development.

b. Subsequent base development is the period when a degree of stability exists, the initial base development plan has been completed and when existing logistical complexes can support tactical operations. No doctrine exists at present to support the subsequent part of base development.

c. Master Planning is the period when a degree of quiescence has descended upon the area, active combat is over, forces remain in the area for peace keeping or occupation duties, and base development ends and Master Planning begins. Current doctrine does not show at what period base development ceases and another form of development commences.

5. FM 100-10 should be revised to contain doctrinal statements, including the above elements of base development.

6. A new Field Manual should be written containing details of planning and implementation of base development.

From the above conclusions, a new definition of base development has been developed. A new doctrine has been proposed for inclusion in FM 100-10 as a separate chapter on Base Development Planning to replace the existing chapter.

Only classified references have been incorporated in the body of this thesis for ease of use. The bibliography contains additional classified material which has been studied and considered in the preparation of this paper. These classified documents cover the events in depth or are the actual documents upon which the unclassified sources have been based.

67. PRELUDE TO DISASTER: A STUDY OF THE LONG-RANGE AND IMMEDIATE CAUSES OF THE INITIAL SETBACKS OF THE SOVIET ARMED FORCES, JUNE 1941, by LTC O. P. Chaney, USA, 146 p.

This thesis examines the immediate and long-range causes of the initial setbacks of the Soviet Armed Forces after the German attack of June 1941. Although the emphasis of this paper is on the period from December 1940 to

July 1941, the background events which directly influenced the early disasters of the Soviet Army are discussed. Specifically, the impact of the Spanish Civil War, the bloody purges of 1937-1938 which purged the Army of valuable leaders, the little-known Lake Khasan and Khalkhin-Col campaigns and the Finnish War are described. Considerable space is devoted to a discussion of the political events leading up to the attack on the Soviet Union, the warnings to Stalin by responsible Westerners, the diplomatic attempts by Russia to buy time, and the reasons which prompted Hitler to launch "Barbarossa". Of special interest is new, heretofore untranslated, Russian materials on the efforts of the Soviet General Staff to develop and test new tactics and doctrine, including the drafting of the 1939 field regulations, changes in troop training, control and organization envisaged by the Main Military Council, the High Command's meeting in December 1940-January 1941 to review the total military preparedness of the Army, the war games of January 1941, and major realignments in the command structure. Additionally, this study makes use of fresh Soviet materials concerning the last weeks of peace, during which the Soviet General Staff moved numbers of troops and equipment to the Western frontiers to prepare for the German "surprise" assault. This is followed by a description of the first days of the attack, Soviet defensive measures, the creation of the State Defense Committee and the Stavka to direct all military operations, the almost-complete annihilation of Soviet armor formations in the first months of the war, emergency provisions for mobilizing the Soviet people, and the evacuation of key Soviet industries to the East. The Soviet High Command fully expected German aggression and took urgent steps to prepare for it. Stalin was aware of the danger but hoped that he could put off the aggression until 1942 when the USSR would be better prepared for war. Finally, a brief epilogue noting events leading up to the great Soviet Army counteroffensive in December 1941 is provided.

The study concludes that the Soviet Armed Forces escaped disaster because of the full-scale mobilization of the country's resources, the evacuation of industry vital to the war effort, the feverish defensive measures undertaken after the invasion, the tireless labors of countless Russian soldiers, and the dynamic and brilliant leadership of certain generals and marshals who had survived prewar purges.

Hopefully, this paper will provide an appreciation of the resiliency of the Red Army which was able to turn near defeat into a massive successful counteroffensive after immense sacrifices of men, equipment and territory. That the Soviet military machine survived the initial setbacks is surprising when one considers that Stalin had eliminated a large percentage of the senior Army officers in the late 1930's and had made several disastrous decisions which adversely affected the combat preparedness of the Soviet Army.

68. HONOR CODES: CAN THEY DEVELOP INTEGRITY IN FUTURE MILITARY LEADERS?, by Major William M. Charles, Jr., USAF, 335 p.

> The inexact or untruthful soldier trifles with the lives of his fellow man, and the honor of his government.
>
> --Secretary of War Newton D. Baker

Good leadership is a priceless commodity that the United States must have to maintain a position of world influence. The federal military academies provide leadership training by teaching basic leadership principles and methods and by providing opportunities for leadership experience through practice. A major goal is the inculcation of honorable character in the student.

This research is undertaken to determine if a formal honor code is an effective means for developing the leadership qualities of honor and integrity in the students of a federal academy. The Air Force Academy Cadet Honor Code is used for an in depth study of one well-publicized system for character development.

Chapter I examines the area of leadership, not from the standpoint of what a man should do to become a successful leader, but from the standpoint of what he must be. Leadership is composed of four fundamental components: character, personality, knowledge, and power of decision. Combined, they produce respect. The most important component of respect is character, an attribute all officers are expected to possess. An officer is considered to have integrity; his subordinates expect it, his superiors desire it, the nation demands it.

Chapter II discusses leadership training programs to determine the place an honor code has in such a program. Precepts and philosophies of formal honor systems are examined. An undergraduate honor code incorporates one or more of the four basic precepts that guard against the liar, the cheat, the thief, and the tolerator. This chapter also explores five basic philosophies that support successful codes.

Since every undergraduate honor system has as a basic purpose the reduction of cheating, Chapter III examines cheating on the college campus. This chapter presents some of the evidence pertaining to the amount of cheating and explores some causes and cures.

Chapter IV contains an investigation of eleven undergraduate honor systems. This examination explores numerous differences that exist between honor codes and discusses apparent weaknesses.

The Air Force Academy Cadet Honor Code is closely examined in Chapter V. Several features make this Code a model code. The code is a student controlled and support system. Mature guidance is provided by knowledgeable staff officers. Safeguards are built in to protect the rights of an accused cadet violator. The indoctrination program for new cadets is well developed, well prepared, and carefully supervised. The Code is oriented on developing integrity through habit and the "spirit" of honorable conduct.

Chapter VI concludes that all honor codes are not effective in developing student integrity nor do all codes try to be. However, this study reveals that an honor code patterned after that of the Air Force Academy Cadet Honor Code can be an effective device for developing integrity in future military leaders.

69 A PROPOSED SYSTEM FOR EVALUATION OF PROGRESS TOWARD ATTAINMENT OF THE STATED GOALS OF THE UNITED STATES IN VIETNAM, by Major Richard L. Curl, USA, 130 p.

This thesis derives a system for evaluating progress toward attainment of the stated national goals of the United States in Vietnam. The thesis begins with an introductory chapter which establishes the need for a rational and believable means for evaluating progress. The complex nature of the conflict, involving political, sociological, and economic as well as military factors, has made it difficult for the American public to understand and appreciate. Similarly, the Administration has found this a singularly difficult war to explain to the people. Public support has been shaken by the impact of a very vocal segment of dissenters and doubters. The term "credibility gap" has been used frequently in connection with Administration and U.S. Military efforts to convince the public that progress is being made.

As the top manager of our widely varied activities in Vietnam and the man responsible for the attainment of our national objectives in Vietnam, the President requires a rational means of evaluating progress as an inherent part of his managerial function of control. Controlling involves measuring performance toward objectives, identifying problem areas, and taking corrective action to restore performance to the required standards where measurement so indicates.

Chapter Three examines the Communist objectives which directly oppose the U.S. objectives. This chapter establishes a fundamental understanding of the enemy's strategy and goals. This fundamental understanding forms the basis for many of the indicators for progress evaluation later to be derived. The chapter points out the key role that psychological and political factors play in Communist revolutionary warfare and outlines Vo Nguyen Giap's concept of the third stage of insurgency as demonstrated by the battles of late 1967 and the Tet Offensive of early 1968. Giap's acceptance of the possibility of a negotiated end to the third stage is a departure from Maoist concepts. The chapter ends with a discussion of factors militating against prevention of war with Communist China. It is concluded that China desires to avoid confrontation with the United States over Vietnam at this time.

Chapter Four discusses the basic U.S. strategy in Vietnam and the doctrine associated with that strategy. Basically, the strategy is to advise and assist the South Vietnamese in implementing a balanced program of internal defense. The attainment of our objective is primarily through the Vietnamese and is dependent on their achievements. The doctrine for internal defense calls for three basic programs: (1) Counter-guerrilla Operations; (2) Populace and Resources Control; and, (3) Environmental Improvement. Interwoven throughout these three programs are the supporting concepts of intelligence and psychological operations.

The U.S. organization for implementing our strategy of advice and assistance is the "Country Team", the U.S. Mission headed by the U.S. Ambassador to

South Vietnam. The various operating agencies of the U.S. Mission are examined to develop the performance factors best indicating the relative success of each agency in its particular contribution to attainment of our national objective. Since much of our success depends on the effectiveness of our advisor effort, the operating agencies are judged, where appropriate, on the results achieved by the organizations they advise.

Activities outside Vietnam, not under the control of the U.S. Mission which effect the course of the war, are evaluated and discussed in general terms. Performance factors are derived in order to determine the effects of these activities in defeating Communist revolutionary warfare and preventing war with Communist China. The effects of Laos and Cambodia are discussed, as is the air war over North Vietnam. However, performance factors are not derived for the latter since the importance of this activity has been artificially magnified to the extent that its effective measurement or evaluation would be inaccurate and misleading.

Throughout this study the status of the pacification program repeatedly emerges as the best single measure of progress toward our national objectives. Current methods of evaluating progress in this area are, therefore, examined in some detail.

Due to interrelationships and interdependence of indicators in each functional area, it is apparent that to achieve meaningful progress, there must be progress in all areas. Some functions may assume a certain primacy at a given time because of the situation. However, all areas must be evaluated to achieve a balanced picture.

Chapter Five recommends an order of evaluating these areas and provides a sample evaluation to better demonstrate the use of the system. A sketch is provided to show the structure of the system visually. Essentially, the system starts with an evaluation of pacification. It is amplified and supported by factors in the military situation and the GVN effectiveness. The military situation is subdivided into factors evaluating the US/FWMAF effort, the RVNAF effort, and the extra-Vietnam effort. GVN effectiveness is measured by evaluating all levels of government, both nation and provincial and lower levels. Supporting these factors are factors of intelligence, psychological operations, and economic support activities. The point is made that the entire structure rests on a foundation of popular support in the United States. Using the proposed system will provide a useful management tool for the controllers of our enterprise in Vietnam. The proposed system will find application in the promotion of better public understanding in support of the efforts of the United States in Vietnam.

70. THE IMPROVEMENT OF MINEFIELD EFFECTIVENESS, by LTC C. A. Debelius, USA, 194 p.

The purpose of this thesis is to develop a method for analyzing the effectiveness of minefields as the basis for determining what specific changes in doctrine or techniques would serve to improve minefield effectiveness in future operations. That there is room for improvement is almost a foregone

conclusion. Recent military history shows that Axis land mining in World War II produced far more impressive results than did Allied land mining. The apparently improper use of mine warfare in the Korean Conflict is still being recalled as long forgotten mines have been unwittingly contacted by hapless civilians.

The first question to be answered is an elusive one--what constitutes minefield effectiveness? The author finds the views of the current doctrine too narrow, almost myopic, in defining effectiveness. Effectiveness should be measured in terms of the extent to which casualties are directly caused by mines and the time lost by the enemy force attempting passage. Time is not included in current doctrinal descriptions of effectiveness and it seems the more important of the two components of effectiveness.

Having chosen to include the time elements in the measurement of effectiveness, it is possible to analyze in some detail the value or lack of value of common minefield breaching techniques. The analytical possibility follows because empirical data is available on the time required for the variety of breaching methods. This thesis includes a detailed analysis of the efficacy of such tactics as explosive breaching, manual probing, mine attrition by artillery fire, mechanical breaching, and the like--for both antitank and antipersonnel roles. In each case, conclusions are drawn regarding optimum strategies for maintaining acceptable effectiveness without excessive expenditure of manpower or materiel.

The thesis is not materially oriented; however, it does describe, where necessary, the characteristics of certain existing hardware and the capabilities of hypothetical mine systems. The real emphasis is on an attempt to find the most efficient means for using what now exists rather than recommending a complete restocking of the land mine shelves in various contingency oriented, planned prestocked storage areas.

Most of this study is an analysis of the strategies of minefield arrangement. Specific laying techniques are usually immaterial. However, air delivery is singled out for special consideration; and, a chapter is devoted to the technique of aerial mining. Some parallels are drawn between the value of various doctrinal specifications for standard ground employed minefields and for those minefields employed wholly or partially from aerial platforms.

Principal conclusions stress the importance of increasing depth as a low-cost means to improve probable effectiveness levels, drastic reductions in recommended minimum densities (particularly for antipersonnel mines), the need for a standard blast resistant fuze, and the use of air delivery to augment, but not supplement the ground emplacement of land mines.

71. THE DESIRABILITY OF SPANISH MEMBERSHIP IN THE NORTH ATLANTIC TREATY ORGANIZATION, by Major Edward J. Donohue, Jr., USA, 133 p.

Spain is the only major non-neutral European nation who is not a member of the North Atlantic Treaty Organization (NATO). As the United States faces

the possible loss of air and naval bases in Spain and as NATO faces the prospect of member withdrawal, the proposition of adding Spain's resources to the Atlantic Alliance is pertinent and timely. The purpose of this thesis is to determine the desirability of including Spain in NATO. The methodology employed includes an examination of Spain and NATO, and the visualization of NATO with Spain as a member. Desirability is based on the advantages and disadvantages of Spanish membership in the alliance.

Spain is the second largest and fifth most pupulous country in Western Europe. An analysis of the strategic value of Spain indicates that her primary advantages are her geographic position in relation to the other nations of Europe and Africa, her manpower resources, her modernizing armed forces, and her rapidly expanding and industrializing economy.

NATO was formed in 1949 with the objective of preventing the Soviet Union from seizing the war-weakened nations of Western Europe. Preventing Soviet expansion into Western Europe is still the primary NATO mission. NATO is primarily a military organization and must provide sufficient conventional and nuclear force to deter or defeat an invasion into the NATO territories. The military threat to NATO consists of the large land, sea, and air forces of the European Communist powers that are allied in the Warsaw Pact. The most recent manifestation of that military might is the presence of a significant Soviet naval force in the Mediterranean Sea. In an attempt to prevent automatic use of nuclear weapons and mutual nuclear devastation in time of war, NATO recently adopted a military strategy of "flexible response". This strategy dictates that an attack by a hostile force would be met with only sufficient force to defeat the attack. However, this strategy demands enough conventional force to be able to defeat a large conventional attack. One of the problems facing NATO is a reduction of troop strength in Europe. This is attributed partly to the sense of complacency among many NATO members concerning Soviet intentions in the European area. NATO also faces problems of nuclear sharing and tactical and logistical problems brought about by the French withdrawal from the military structure of NATO.

Although Spain has not been permitted to join NATO, it is probable that she could be accepted upon the departure of Generalissimo Francisco Franco, a political liberalization of Spain, or an urgent NATO requirement for Spain's assets. If Spain were admitted to the Atlantic Alliance, her most significant contributions would be geographical and military. Spain's geographical assets would allow NATO to better accomplish its mission by using the Iberian Peninsula and the Balearic and Canary Islands for offensive and defensive operations. NATO control of the straits of Gibraltar would be most important in time of war for naval reasons. The Iberian Peninsula would provide space for the dispersal of troops during a nuclear war and for the assembly of tactical units for operations into the central area of Western Europe. The Iberian Peninsula also could be used for the displacement of critical command, communications, and governmental facilities, as well as for the establishment of supply bases and storage sites for prestocked equipment. The addition of Spain's armed forces to NATO would facilitate the successful accomplishment of NATO's mission by the addition of 275,000 trained men. These troops would

help meet NATO's need for troops in view of the recent troop reductions in Europe. The Spanish Army, which has a strength of 200,000, is well suited for the defense of the Spanish mainland and can be used for reinforcement of other NATO troops to help repel a Soviet invasion of Western Europe. The trained reserve force of 2,000,000 men would add significantly to NATO's military power in a conventional or a nuclear conflict. The Spanish Air Force and Navy could be integrated into NATO's defense efforts and used in operations against the new Soviet presence in the Mediterranean Sea. These military assets would enhance the strategy of flexible response by providing additional conventional forces to the NATO commands.

The disadvantages of Spanish membership include the criticism to which NATO would be subjected for embracing a nation ruled by a dictatorial regime. There is also the possibility that the Soviet Union would be antagonized by the strengthening of NATO during a period of detente.

Based on an analysis of NATO's purposes and needs, and on an examination of Spain's geographical military, and political assets, it is concluded that Spanish membership in the North Atlantic Treaty Organization is desirable because of the benefits that would accrue to the Atlantic Alliance and Spain.

72. AN ANALYSIS OF REAR AREA SECURITY IN THE ROAD DIVISION, by Major J. J. Durbin, USA, 118 p.

This thesis evaluates rear area security doctrine for the ROAD division in middle or high intensity warfare. It initially undertakes an examination of historical precedents to establish certain unchanging parameters which might serve as a standard by which current or recommended structures or doctrines might be evaluated. Time honored objectives of rear area warfare are identified as the disruption of logistical support, diversion of front-line combat troops from the battle area to the rear, commitment of reserves such that their influence on the main battle is minimized, and disruption of command and control functions.

A successful defense of the rear area has depended largely upon the ability of the division force to learn quickly of an attack and react with even a minimal force to that attack. A successful defense has also involved a flexible organization to contest the varied types of attacks and adequate firepower to overcome small arms attacks which enemy rear area forces have historically carried on. Finally, an offensive action exercised by a single responsible commander has been important.

Since the Soviets appear to be the most likely and strongest adversary is middle or high intensity conflict, the threat posed by the U.S.S.R. is examined and found to be formidable. Current Soviet military thinking demonstrates their perennial advocacy of extensive, small scale actions in their enemy's immediate rear through the use of regular and irregular forces.

The present U.S. Army structure and doctrine for rear area security are reviewed. The organization of the units habitually associated with the

division rear is identified in terms of manpower, communications, mobility, and firepower. Current rear area security doctrine is reviewed, and a brief analysis relating the doctrine to the organization is conducted.

Current U.S. Army capabilities are evaluated in the light of the current Soviet threat. The analysis is conducted by using the defensive rear area parameters identified in this historical study. Current capabilities of the ROAD division fails to measure up to the comparison in the areas of communications, mobility, and firepower. Communications nets are not sufficiently responsive and are not conducive to the "cross-telling" of intelligence information or requests for assistance within the division rear. Mobility is limited to cargo type vehicles which could be provided only if diverted from their primary tasks. The levels of firepower which could be generated by the units within the rear are compared. One of the weakest units, if not the most impotent, is the division support command.

As a result of this evaluation, a small but relatively strong force should be created to answer the weaknesses of current doctrine, and the responsibility for the division rear should be given to the support command commander. This force may be called "a rear area security company". It consists of three major subordinate elements: a reconnaissance/escort platoon, a rifle platoon, and an aerial platoon. Appropriate missions for the rear area security company are to provide ground and aerial escort for supply convoys, to provide offensive ground and aerial patrolling of the division support areas, to provide aerial surveillance of the division rear area, and to provide a quick-reaction force capable of coming to the assistance of any unit under attack in the division rear. In essence, the force provides the means for the division support command commander to fulfill his new responsibility and, at the same time, improve the security of all units within the division rear. Communications may be adjusted within present resources to overcome the communication weaknesses of the present system.

Applied against typical rear area attacks this model is found to have the flexibility, mobility, and firepower to meet a threat on a small scale. Significant threats would require the allocation of additional combat power. It is concluded that the ROAD division does not possess the capability, in its normal deployment, to counter effectively a threat as significant as that presented by the Soviets. It is recommended, therefore, that a small, highly mobile, security force of company size be provided the division support command commander to provide rear area security for the ROAD division. It is further recommended that the support command commander be given territorial responsibility for the division rear.

73. AN EVALUATION OF THE EFFECTIVENESS OF THE UNITED NATIONS' PEACE-KEEPING EFFORTS BETWEEN THE ARABS AND ISRAELIS, by Major J. C. Eitel, USA, 84 p.

This study is (1) to determine the effectiveness of the United Nations' peace-keeping efforts between the Arabs and the Israelis from the time the United Nations accepted the Palestine problem in 1947 until shortly after the 1956 outbreak of hostilities; (2) to compare and evaluate the decision and

actions of the United Nations to the decisions and actions of the British from the publication of the Balfour Declaration to the presentation of the problem to the United Nations, and, (3) to evaluate the development of the attitudes which presently exist within the Arabs and Israelis. The scope of the study is reduced to eliminate areas which have been the topic of other studies. Among these are the historical right of various nations to Palestine, the legality of the League of Nations and the United Nations' decisions, the use of armed forces by the United Nations, and anti-Semitism as a development factor. The critical factors continually considered during this research are the reactions of member states to the League of Nations' and the United Nations' decisions, and their implementations by either compliance or non-compliance and the nationalism of the Middle East states.

The history of Palestine, with Britain as the Mandatory, is studied to determine what brought about the conditions which existed when the problem was presented to the United Nations. The actions of the United Nations and its agencies is studied to determine similarities and differences in methods of operation. An analysis of the comparison is undertaken to reveal the effectiveness or ineffectiveness of the United Nations and its agencies. This analysis will constitute a basis for later conclusions.

A review of literature reveals a bias in the works of many authors. However, a few of the more valuable works are worthwhile mentioning. Keesing's Contemporary Archives is an incomparable reference source because it provides a wealth of data in the form of speeches by many notable figures involved in the conflicts, complete hearings from United Nations sessions and British Parliamentary discussions, and a compilation of facts on the events of the day. Another outstanding reference, because of its documentation, is Paul L. Hanna's book, British Policy in Palestine. The facts referred to in both of these works are further corroborated by information from other primary sources.

The British background in Palestine is developed from the time of the Balfour Declaration until after World War II. During this time the British made little headway in fulfilling the conditions of the Mandate. The Churchill White Paper of 1922 was the first of many policy papers which interpreted the Balfour Declaration and the Palestine Mandate to further British aims rather than those of the League of Nations. Both the growth of anti-Semitism in Europe and of nationalism in the Arab countries worked in opposition to the British position. As a consequence, Britain's policy could not solve the problem.

The action taken by the United Nations to bring about a peaceful solution to the problem is studied. The plan for action was thwarted by British acts of non-compliance with the United Nations and by British efforts to maintain a tottering position among the Arabs. The United Nations seldom depicted a sense of urgency in their actions, and they failed to plan the administrative details of their well-meaning resolutions. The lack of support by member states can be seen by the actions of United Nations agencies such as the Military Observers, the Mixed Armistice Commissions, and the Emergency Force.

Because the size of the task was normally larger than the agencies could handle, their efforts became ineffective in reaching a solution. Two instances of success did occur: Doctor Ralph Bunche succeeded in arranging an Armistice after the Arabs agreed to meet with the Israelis, and the Emergency Force prevented clashes between the Egyptian force and the British, French, and Israeli forces during the latters' withdrawal from the Suez Canal after pressure was exerted by the United States and the U.S.S.R.

Comparisons are drawn between British efforts and United Nations efforts at resolving the Arab-Israeli problem. Recommended, but rejected, solutions by the British are compared with the United Nations' recommendations. The actions and results of the United Nations agencies are examined for their effectiveness in accomplishing their tasks.

The following conclusions are derived from the data presented in the study. The United Nations was ineffective in maintaining peace between the Arabs and the Israelis for these reasons: lack of support from its member states, British recalcitrance to United Nations' decisions, refusals by the Arabs to talk in conference with the Israelis, and means not sufficiently provided to United Nations agencies to accomplish their assigned tasks. This study has revealed that the Arabs have developed a hatred for the Jews which has been exploited by Arab leaders, and assists them in maintaining control of their countries. The implication of this situation is that no Arab leader will seek peace with Israel so long as his position in power depends on proclaiming hatred of the Jews. This study also discloses that when the major powers act jointly, the Arabs and the Israelis respond to peace moves. This implies that if the major powers desire peace between the Arabs and the Israelis they can have peace by working in concert. The study also reveals that the Israelis have made certain nation gains by force rather than by waiting for United Nations actions. This implies that Israel may not acquiesce to any future United Nations solutions to her problems.

74. A SUGGESTED POLICY FOR INCORPORATING OPERATIONS RESEARCH/SYSTEMS ANALYSIS INTO THE INSTITUTE OF COMBINED ARMS AND SUPPORT'S MANAGEMENT MODEL, by Major Harry F. Ennis, USA, 142 p.

The U.S. Army must continually strive to maintain its posture with respect to its materiel, organization and doctrine which will permit it to respond to any future threat. The nature of modern warfare requires that the weapons of war be sophisticated, the organizations flexible, and the doctrine effective. In achieving these objectives, many variables must be manipulated to obtain the best possible fighting combination for our national security. At the same time, this development must be accomplished as economically as possible to preserve men, time, and money.

The U.S. Army Combat Developments Command (USACDC) is charged with developing operations, organizational, and doctrinal concepts for the Army of the future. USACDC through its many agencies and institutes undertakes combat development programs which are designed to produce the best possible Army in successive five year periods, 20 years in the future. These Army

Combat Development Programs are identified by the year in which they are implemented, e.g., Army 75 or Army 85. The Institute of Combined Arms and Support (ICAS), within USACDC, is responsible for developing the combat doctrine for forces which employ combined arms. In discharging its combat developments responsibilities, ICAS is guided by a management model. To proceed through the development process various critical managment decision check points in this model must be passed. This study is directed to the incorporation of the techniques of Operations Research/Systems Analysis into the aforementioned model to provide the best decisions at the identified check point. It is essential that modern military managers be cognizant of these valuable aids to decision making and that these aids be employed to insure the development of the most efficient Army for the future.

The modern analytical methods, identified by the term "Operations Research/Systems Analysis," employ scientific and analytical techniques in providing the decision-maker with a more quantitative basis for his decisions. As such, they are not particularly new or revolutionary. However, Operations Research/Systems Analysis differs in one important respect from earlier quantitative analysis efforts in that its goal is clearly to find the optimum solution to a problem rather than merely suggest a better solution. Quantitative analysis has found application in the military and industry since before World War II. However, it was during that conflict that the name Operational Research was applied to these techniques when being used by the British in solving problems of RADAR operations. An example of the application of Operations Research/Systems Analysis by the United States during World War II was the inter-disciplinary team approach to the development of the world's first atomic bomb. Since World War II, Operations Research/Systems Analysis has been used successfully in the development of such sophisticated weapon systems as the POLARIS and the SENTINEL.

The applications of Operations Research/Systems Analysis have not been limited to the military. Industry has used these modern analytical methods extensively to increase productivity, to improve product quality, and to maximize distribution functions.

Operations Research/Systems Analysis is not proffered as a panacea for all management ills; it has some inherent limitations. One must be sure that the problem can be approached by quantitative means. Further, the use of these techniques is expensive in terms of time and money expended. Their employment often requires considerable automatic data processing support.

Mathematical and statistical techniques which have application in Operations Research/Systems Analysis range from those which are probabilistic in nature to those which are deterministic. Examples of these techniques are probability theory, statistical analysis Monte Carlo techniques, simulation, game theory, and linear and dynamic programming. In the order listed, these techniques are increasingly deterministic, the former being ideally suited for coping with uncertainty, the latter providing rigorous solutions to mathematical models. The methodology used in bringing these techniques to the decision making process includes the use of the scientific method, the interdisciplinary team, and mathematical modelling.

How can these techniques and methodology be used to improve the development of the Army of the future? The developmental process must be investigated briefly before one can answer that question. The development process is guided by the Combat Development Objectives Guide (CDOG) and its important objectives and requirements documents: the operational capabilities objective (OCO), the qualitative materiel development objective (QMDO), and the qualitative materiel requirements (QMR). Theoretically, 20 years should elapse between the identification of the desired operational capability and the introduction of new materiel into the field, during which time the objective is becoming progressively more clearly defined. Concurrent with the final phases of the development, the Tables of Organization and Equipment (TOE) and Field Manuals (FM) are being prepared to provide the organization and doctrine for the period in question.

To study the incorporation of Operations Research/Systems Analysis techniques into the ICAS Model, one must analyze the development process, identify the critical management check points and select the techniques which are applicable. Within the ICAS model, the author identified the following as critical check points: (1) review and analysis of alternative conceptual designs; (2) requests for input to doctrine studies; (3) analysis and selection of best doctrinal approach; (4) comments on coordination draft; and, (5) analysis and synthesis of derivative studies. It is suggested that the following techniques might be applied: (1) probability theory and modelling; (2) "reverse war gaming"; (3) war gaming; (4) conventional coordination with operations research assistance in resolving differences; and, (5) PERT trade-off analyses, linear and dynamic programming. The order in which these are listed corresponds to the order of the check points listed above.

In conclusion it should be emphasized that operations Research/Systems Analysis does not relieve a manager or commander from decision making; it merely aids the executive in arriving at sounder decisions. The Institute of Combined Arms and Support should make full use of these techniques in the pursuance of its combat development responsibilities.

75. OVERSUPERVISION - A LEADERSHIP FAILURE, by LTC J. A. Evrard, USA, 120 p.

The problem considered in this thesis is whether a division commander can determine if he has oversupervised his subordinates solely from the behavior of his subordinates. It is possible that a subordinate, superior, or a contemporary of a supervisor may tell him directly he is guilty of oversupervision. However, it is assumed for this thesis that this does not happen. It will be left to the division commander to discover his oversupervision himself.

In order to determine whether he is an oversupervisor, a division commander must know what oversupervision is. He must know the behavioral reactions which are produced in subordinates who are oversupervised. He must be in a position to observe the behavioral patterns of his subordinates. If the psychological reactions which oversupervision dependably produce are present in his subordinates, the division commander must be disposed to consider his own leadership failure as a possible cause of his subordinates'

actions. If all of these conditions are met, it is possible a division commander might find that he has oversupervised his subordinates.

Oversupervision is defined as that leadership failure in which a superior usurps or withholds part or all of the subordinate's rightful authority to determine the means or methods of executing the subordinate's responsibilities.

Why does oversupervision frustrate subordinates? What behavioral reactions does it produce in subordinates? Everyone has certain fundamental social needs. Man needs to live, to love and be loved, to belong, to dominate, to determine his own courses of action, and to understand himself and others. When the fulfillment of any of these needs is blocked, man is frustrated. He reacts in predictable patterns. He attacks the frustrating object, bypasses it, or avoids it. Because the staff and commanders subordinate to a division commander are generally well educated, mature, and responsible individuals, they react to frustration in a restrained way. Certain predictable reactions to social frustration manifest themselves in the subordinates of a division commander who oversupervises. The subordinates will exhibit the following reactions: (1) disregard those instructions which they consider to be excessive; (2) lose some of their initiative; (3) discontinue their upward communication with the oversupervisor; (4) request transfer to other units; (5) become restless, nervous, and will yield to temperamental outbursts; and (6) become apathetic. Although several other reactions may also occur, these six behavioral reactions will occur so that the division commander may observe them. Not all of these six reactions will be manifested in a group of subordinates who are oversupervised.

A typical division commander is qualified to interpret these six behavioral patterns as manifestations of his subordinates' frustrations. His qualification is based partly on his formal educational background in psychology. However, he must, primarily depend on his 25-30 years or practical, leadership experience. He will know, if he observed the six behavioral patterns, that his subordinates are unhappy or frustrated. He will know that there is something wrong in his command environment. (Each of the reactions produced in subordinates by oversupervision may also be produced by a variety of leadership failures. This oversupervision may not be in fact the real cause of subordinates' frustrations.)

If a division commander recognizes all six of these behavioral patterns, he may evaluate his own leadership style for the possible cause of his subordinates' frustrations. However, the oversupervisor will probably not be disposed to look inward for the cause of his subordinates' unhappiness. Critical introspection is inconsistent with the oversupervisor's personality. More realistically, an oversupervisor may never even notice that his subordinates are unhappy. An oversupervisor will, therefore, probably never know that he is oversupervising. A division commander will probably not determine, solely from the behavior of his subordinates, that he is an oversupervisor. Someone must tell an oversupervisor that he is guilty of his leadership failure. Therefore, if a division commander wonders if he is an oversupervisor, the easiest and most effective way for him to determine the answer is to discuss the problem with his subordinates.

76. A HISTORICAL STUDY OF UNITED STATES ARMY ENGINEER OPERATIONS IN THE REPUBLIC OF VIETNAM, JANUARY 1965 - NOVEMBER 1967, by Major G. E. Galloway, Jr., USA, 340 p.

In the spring of 1965, the United States committed its combat forces to the war in South Vietnam. To back up the combat elements, the full range of the armed forces' combat support and combat service support organizations moved into the Southeast Asia area of operations. This thesis chronicles one aspect of this support, the operations in Vietnam of the United States Army Corps of Engineers.

The majority of this thesis is a presentation of the history of engineer operations from the arrival of the first engineer unit in May 1965 through the efforts of the engineers in October 1967. Following this chronicle the thesis presents the current doctrine pertaining to engineers and compares this doctrine to the actualities of war in Vietnam. An analysis and appraisal of the efforts and doctrine of the Corps of Engineers concludes the study.

The thesis is limited to the operations of divisional combat engineer battalions, nondivisional combat engineer battalions, construction battalions, command and control headquarters (groups, brigades and commands), and the separate support companies associated with these battalions. The primary focus rests on the activities of battalions, their projects and their problems. The thesis does not include the activities of either special engineer units or installation support detachments. The study begins with the arrival of engineer units in Vietnam and, as a result, includes neither mobilization and training within the United States nor movement from the United States to Southeast Asia.

Basic data for the thesis are taken primarily from operational reports-lessons learned, command reports, after action combat reports, and histories prepared in Vietnam by engineer combat and logistical units. They are supplemented by official correspondence, trip reports by the Chief of Engineers' Liaison Officer to Southeast Asia, and personal interviews and correspondence with over eighty generals and field grade officers who served in Vietnam. Background data are taken from articles in professional journals and from speeches made by senior members of the Department of Defense.

The history is presented in chronological sequence and is divided into five periods. The presentation of engineer operations during each period is preceded by brief discussions of the political, tactical and logistical situations that influenced engineer activities. The engineer history highlights the typical missions and projects assigned to each of the units, the problems and new developments encountered by these units, and the organizational structure and command relationships that arose from these problems and developments. The history is followed by a description of the doctrine governing the organization of a theater of operations and the organization and employment of engineers within a theater. Doctrine is compared to the actual organization and employment of engineers in Vietnam. The differences and similarities are analyzed and appraised.

In conclusion, the thesis indicates that because of the nature of the war in Vietnam, the piecemeal commitment of United States forces to the war, and the fact that organizational doctrine has never put to the test, it is impossible to make a definitive judgement to the effectiveness of current doctrine. However, a study does indicate that the experience gained in Vietnam has raised many questions with respect to the applicability of current doctrine. Questions may then be raised concerning the future of the centralized engineer control organization in Vietnam, the feasibility of establishing command and control headquarters that are multipurpose rather than combat or construction oriented, the concept of a universal engineer battalion suited for both combat and construction, the solution of problems arising from the Vietnam war, and the promotion of innovations developed in the Vietnam war.

77. AN INVESTIGATION OF THE APPLICABILITY OF MANAGEMENT BY OBJECTIVES TO THE COMMAND OF ARMY BATTALIONS NOT ENGAGED IN COMBAT OPERATIONS, by Major W. A. Hokanson, USA, 240 p.

This thesis investigates the applicability of management by objectives to the command of Army battalions not engaged in combat operations and the value in providing information and guidance in the use of such a technique to supplement established leadership principles, command and staff procedures, and management doctrine. To be considered applicable required having (1) a sound basis in current management theory and business practice, (2) a broad degree of conformity with established Army doctrine for command and staff procedures, operational readiness training, leadership, and management and (3) being usable at the battalion level.

Management by objectives is more than "one expert's formula for success." The concept goes beyond the common practice of prescribing duties, functions, or responsibilities for individuals or groups within organizations. It focuses these elements on the results they are expected to produce in a given time-frame. These results, or objectives, must be stated in terms that are definite enough to enable progress to be measured, either quantitatively or qualitatively. The measurement criteria may be crude estimates, but should be readily visible or routinely provided to show progress.

Army doctrine constituted the institutional approach in this analysis. Management by objectives was found to be substantially equivalent to combat command and staff procedures, including the concept of mission and the techniques of mission analysis, mission restatement, designation of decisive, attainable objectives, and staff functioning. Army management doctrine appears to encourage the concept of management by objectives. Five of the eleven principles of military leadership support the concept prima facie. The remaining six do so in part. Management by objectives in no way conflicts with operational readiness doctrine and provides a mechanism for applying it.

A survey of officers attending the Command and General Staff College found that management by objectives had been used in 171 different Army battalions representing virtually all types of branches. A survey, responded to by 176 battalion commanders in Germany and Korea, produced four paradigms of management by objectives programs in use. Sixty-nine of these commanders were using some form of written objectives.

The criteria of applicability had been satisfied; management by objectives is applicable to the command of Army battalions not engaged in combat operations.

A documentary analysis of programs of instruction and Army publications revealed that the Army is not providing its officers instruction in the concept of management by objectives and has no publication which adequately explains the concept. It was concluded that the Army should provide such information and guidance in both courses of instruction and publications. The material should be presented for use at the discretion of the responsible commander or manager, not as an obligatory technique.

A further conclusion of the thesis was that the Army appears to be fostering a false dichotomy in separating management and leadership although doctrinally there is a substantial overlapping of what is defined as command, management, and leadership. As a result, a substantial body of management knowledge pertaining to the motivation of personnel and the improvement of organizational effectiveness is being ignored by the Army.

78. A MODELING CONCEPT OF DIVE BOMBING TECHNIQUES AS A MEANS FOR IMPROVING DELIVERY ACCURACY, by Major S. C. Humphries, Jr., USAF, 100 p.

Although the universally recognized need for improving air-to-ground weapon delivery accuracies has resulted in a requirement for continual studies, testing, extensive proficiency training, and the development of sophisticated automatic bombing systems, wide variations and inconsistencies in dive bombing accuracy continue to exist. Only a limited number of these efforts have used analytical approaches as a means of optimizing and comparing techniques as an aid for improving manual dive bombing accuracy.

The purpose of this study is (1) to develop a modeling concept for the presently used drifting technique and for the convergent tracking technique that would indicate error and maneuvering G magnitudes as a means of (a) minimizing bomb impact error for each technique through an appropriate selection of model parameters and variables and (b), in turn, comparing these two techniques; and (2) to determine, through this modeling concept and other quantitative and qualitative analysis, which technique possesses the better characteristics for improving F-100 dive bombing accuracy.

The development of these models included, as mathematical considerations, not only the direct error-producing variables of the manual dive bombing problem at the bomb release position, but the space positioning variables of technique used to arrive at that position. Thus, by an appropriate selection of parameter values for these models, using typical F-100 delivery conditions as an example, bomb impact-error magnitudes were determined as a function of the horizontal starting position on final (an independent variable of the dive bombing maneuver).

Following the development of this unique concept of impact error as a function of horizontal starting position on final, it was determined that the drifting and tracking technique models both showed similar improvements for the selected error minimization example. Further, error comparisons for both models showed neither to possess an advantage over the other.

However, a sensitivity analysis of model derivation assumptions, including parameter selections, and further analyses of the characteristics of the models and techniques clearly led to the following conclusions:

1. The drifting and tracking technique models developed can be used as a guide in the selection of parameter values for minimizing impact errors of each technique.

2. The tracking technique model can be used to provide a reasonable prediction of bomb impact errors and release G-load.

3. Employment of the tracking technique, for a given set of conditions that can be determined from the use of the tracking technique model, should result in overall dive bombing accuracy improvements.

79. IDENTIFICATION AND DISPOSITION OF REMAINS IN GENERAL WAR, by Major J. A. G. Klose, USA.

Graves registration techniques must be improved to provide a faster, more precise, and simpler means for identification and disposition of remains. The purpose of this study is to investigate current doctrine, and proposed doctrine, to recommend methods and techniques for graves registration that will facilitate handling the extremely large number of human remains anticipated after a nuclear, chemical or biological attack in a general war. Original methods and techniques that bridge the gap between current doctrine and proposed doctrine and that expedite and simplify the identification and disposition of remains during and after a general war are presented.

Two new procedures to expedite identification of remains during and after a general war were proposed. The first procedure was to document each individual with identification information prior to assignment to a general war theater of operations. This documented identification information is then reduced to ADP language for use, during and after a general war, for casualty reporting and ADP assisted identification processing. The second procedure was to use the documented identification information for real time information retrieval during scientific and technical identification processing at central identification laboratories. These two procedures will allow the central identification laboratories to positively identify badly burned and mutilated remains with only one extremity or the lower part of the skull usable for identification. The two proposed identification procedures also allow the central identification laboratories to identify badly mutilated skeletal remains without extremities or skull, with reasonable assurance. Proposed requirements for further study in the field of identification are to adopt footprints as identification media equal to fingerprints and to develop an ADPS method of comparing fingerprints and/or footprints to ADPS data on file in order to provide a rapid means for identification.

The author proposed one new technique that promises to expedite the disposition of remains. This technique is to cocoon remains as located on the battlefield in rigid polyurethane plastic foam. The plastic foam cocoon

will retard the decay and decomposition of the remains and could eliminate the requirement for hasty burial on the battlefield. The disposition process can then be expedited by the elimination of the time and effort required to dig and close graves and the necessity to decontaminate remains prior to evacuation. The plastic foam cocoons will protect personnel handling remains from the residual effects of chemical and biological contamination.

A summary of the conclusions of this study follow:

1. The full potential of ADP and its application to graves registration activities has not been exploited.

2. ADP equipment used for real time identification information retrieval will expedite and simplify identification of remains during and after a general war.

3. Compilation and documentation of identification information on each individual prior to assignment to a [illegible] war theater of operations will expedite and simplify identification of remains.

4. Footprints are excellent identification media and should be used for identification of remains.

5. A computer fingerprint/footprint identification system would have immediate application in graves registration activities.

6. Rigid polyurethane plastic foam used to cocoon remains will expedite and simplify the disposition of remains in the following areas:

a. It will afford protection to the remains equal to or greater than hasty burial.

b. It will protect personnel handling remains from residual effects of chemical or biological weapons.

c. It will expedite handling remains and personal effects.

d. It will facilitate storage of remains at GROP's, army cemeteries and central identification laboratories.

80. AN ANALYSIS OF COMMAND RELATIONSHIPS BETWEEN FEDERAL AND STATE MILITARY FORCES, AND LOCAL LAW ENFORCEMENT OFFICIALS DURING CIVIL DISTURBANCE OPERATIONS, by Major J. F. McCall, USA.

The problems attacked by this thesis are 1) to trace the employment of federal military forces in civil disturbances, 2) to analyze the development of command relationships used in civil disturbance control, and 3) to determine that command relationship which best facilitates centralized direction and unity of effort.

The thesis addressed a non-martial law-situation and made two assumptions: first, that there will be no major change in active army force structure and second, that the legal restrictions on military involvement in civil disturbances will remain essentially unchanged.

The control of civil disturbances requiring the combined action of the Active Army, the National Guard, and local law enforcement officials has become a paramount issue. There has been considerable research into the legality of federal intervention and the actual conduct of riot control. There has been less published material on command relationships. This has been due in large part to the flexibility of command relationships, which, without doctrine, simply bend to the situation, thereby defying classification and analysis.

Unusual command relationships are accepted today as part and parcel of civil disturbance control. No one questions liaison from higher to lower, or the by-passing of intermediate headquarters. This thesis documented the origins of these and other special concepts.

The historical background surrounding the use of federal troops in civil disturbances was traced. No attempt was made to record history for history's sake, but, rather, to record those disturbances where unusual command relationships evolved or where the basis for present day philosophy was laid.

Six case studies of major civil disturbances in the modern era were considered: Little Rock (1957), Oxford (1962), Selma (1965), Detroit (1967), The Pentagon (1967), and Chicago (1968). The case studies were drawn from material available in the Office of the Chief of Military History, files of the Directorate for Civil Disturbance Planning and Operations, the Office of the Deputy Chief of Staff for Operations, the U.S. Army Command and General Staff College Library, the library of the University of Kansas at Lawrence, personal interviews, and other sources. These studies analyzed the development of civilian-National Guard Active Army command relationships at the disturbance site.

Intra-police command relationships in 25 high priority cities were analyzed.

The complicated welter of command relationships which govern the National Guard on state active duty were studied and the various command relationships at the state level were presented. This summation represents a distillation of congressional hearings, Department of the Army records, and other sources.

An in-depth exploration of the command relationships of the Active Army task force commander with National Guard and civilian authorities was made. Four arguments for increased military control in the disturbance area were considered. The author did not endorse these arguments, but no refutation was offered. From experience, the average reader can find ample rebuttal.

Command relationships between military and civilian agencies engaged in civil disturbance control have received increased attention in recent years. Has the pressure of unrest caused formal or informal agreements to be negotiated? Opinion from seven major headquarters concerned with civil disturbance planning were surveyed.

It is concluded that mutual coordination, while appearing somewhat loose on the surface, is an effective command relationship under which operations can be conducted. Data compiled in the study brought to light the stabilizing influence of the Active Army, serving as a posse comitatus, during the turbulent early days of the Republic. Further, predictions were for a continued involvement of the Active Army in civil disturbance control, despite increased National Guard capability and increased planning at all levels.

81. AN INQUIRY INTO UNITED STATES DEFENSE ARRANGEMENT COHESION THROUGH THE USE OF ALLY VOTING BEHAVIOR IN THE UNITED NATIONS GENERAL ASSEMBLY, by Major J. D. Mussells, USA, 189 p.

The thesis evaluates the cohesiveness of U.S. defensive pacts through an examination of national voting behavior of the United States and its allies in the United Nations General Assembly. It also develops a methodology for reassuring the voting behavior in the General Assembly that indicates foreign and security policy similarity among members of defense arrangements.

To avoid subjectivity, the House of Representatives Committee on Foreign Affairs' definition of a United States ally as a member of "the collective security treaties in which the United States has agreed to the use of its military forces for the mutual defense of the parties" was accepted. Forty-two nations of the United Nations members were classified as United States allies.

The data base for the study was national voting on 308 General Assembly roll-calls. The study covers a period of twenty years--or twenty United Nations sessions--beginning with 1946 and ending with 1965.

Roll-calls, for which rosters of national voting are provided in the Yearbook, can be considered important roll-calls. Therefore, the judgement of the United Nations Secretariat concerning the importance of the various roll-calls was accepted.

An "important roll-call" was assumed to imply a controversial issue. A controversial issue was defined as one for which the total minority roll-call vote was twenty per cent or more of the majority vote or upon which there was direct opposition between the United States and the Soviet Union.

In cases where there was a roll-call both in committee and in plenary on the same issue, either (but not both) roll-call was included. The plenary roll-call was preferred, but where the plenary roll-call was not reported in the Yearbook by nation, the committee roll-call, if reported, was used.

Three formulas were used for comparing General Assembly voting behavior of United States Alliance partners with that of the Soviet Union. The first of these formulas was that of Marshall R. Singer and Barton Sensenig III. The second formula was Lijphart's. The third formula was the author's modification of Lijphart's formula.

For purposes of analysis, roll-calls were arranged into five categories: All Issues, Political and Security Issues, Issues Other than Political and Security, Colonial Issues and Peaceful Settlement of Disputes.

The study's major findings may be summarized as follows:

1. Within the limitations set down for use of General Assembly roll-call voting, the methodology developed and used appeared to be a promising means of indicating relationships between national attitudes.

2. Allies appeared to agree more closely with the United States on Political and Security matters; indices with most allies were lowest on Colonial Issues. There was some improvement over the period studied in agreement with the United States on measures for peaceful settlement of disputes.

3. Most nations which were brought into the United States system of defense alliances during the period studied showed an increase in agreement on Political and Security matters and on All Issues. Agreement on Colonial and Other Issues than Political and Security seemed little affected.

4. Allies seem to be polarized by stress situations in spite of differences in attitudes and voting independence in some areas; there is among the United States and its allies a recognized mutuality of concern on Political and Security Issues.

5. There were no clear signs pointing postively to future trends. A general movement away from agreement with the United States in the General Assembly was suggested, however, by an almost uninterrupted decline in median indices of agreement with the United States since 1958 and a marked decline in indices for 1965 from those of 1963. There was little to suggest, on the other hand, that crisis situations will not continue to polarize allies.

82. AN EVALUATION OF THE CORPS OF ENGINEER NUCLEAR CONSTRUCTION CAPABILITIES, by Major E. G. Rapp, USA, 104 p.

Construction with large buried explosions is a recognized technique of military and civil engineering. Historical examples show that large underground blasts have been successfully used to carve out harbors and canals, to remove obstacles and navigational hazards, to construct reservoirs and to fracture and move large quantities of rock in mining and quarrying operations. Research conducted since 1957 indicates that nuclear explosives can be safely and economically used for these purposes. From this research effort, a practicable nuclear construction technology is evolving. This investigation was conducted to determine if the Corps of Engineers has developed sufficient expertise, equipment, facilities, services and qualified personnel to use

this technology in managing nuclear construction operations. The investigation was not concerned with the tactical use of atomic demolition munitions, but focused on the nontactical use of Plowshare explosives (nuclear explosives designed for contructive engineering purposes) in executing future military construction and civil works projects.

In order to determine what technical skills will be required in managing nuclear construction operations, a review was made of the elements of nuclear construction planning; the models used in making design, safety, engineering and cost analysis; the support requirements prior to and during construction; and finally the policies which govern the use of Plowshare explosives nationally and internationally. This review attempted to describe what needs to be managed from an engineering standpoint. Once the review was completed, an investigation was made to determine if existing Corps of Engineer agencies have the ability to use this technology in managing nuclear construction operations. The Corps' nuclear construction activities were reviewed to determine which agencies are involved and to determine the demonstrated capabilities of these agencies.

The Corps' demonstrated capabilities with the requirements of the technology were compared, revealing that the Corps is deficient in its ability to design nuclear construction projects. Specifically, the Corps does not have a capability of using existing first-principle design models. Although the Corps has adequately demonstrated its capability to design a nuclear construction project using scaling procedures, this capability alone is not adequate in the light of recent technological developments and experience gained in Plowshare testing. In current practice, scaling models are used in making preliminary designs of a project. Final designs are made using first principle numerical simulation models. These models describe the dynamic effects of a buried nuclear explosion as a function of time, using the first principles of classical physics (conservation of mass, energy and momentum) and the properties of the media as determined by preshot investigations. The Corps of Engineers does not have the capability of using these models; hence, it does not have an adequate capability of making or checking the final design of a nuclear construction project. Specifically, this deficiency includes:

1. A lack of expertise in the use of lagrangian stress wave codes for design of nuclear events.

2. An inadequacy of equipment and facilities for making high pressure measurements of rock properties.

3. A deficiency of qualified personnel for interpretation and reduction of material properties data into a form acceptable for design purposes.

The investigation revealed that the Corps does have significant resources scattered throughout its organization to meet these deficiencies. However, no evidence could be found to indicate that these resources have been tapped to develop an in house capability for design using first principle techniques.

An analysis of these facts was made in terms of future implications. The analysis indicated that this inability to perform necessary engineering investigations could place the Corps in an awkward position should its capabilities as a nuclear construction management agency be challenged. Additionally, it would appear increasingly difficult to convince appropriate authorities that the Corps knows what it is doing in this field of engineering without a capability of designing or checking designs using accepted procedures. Because design is fundamental to engineering, the lack of an adequate design capability is considered a major deficiency.

The investigation concluded that the Corps of Engineers does not have a practicable nuclear construction capability at this time. In order to field a nuclear construction project, the Corps would be overly dependent on other agencies to provide necessary management services to direct, control and evaluate the design and execution of Corps projects.

This thesis recommends that the Corps develop an in-house capability to design nuclear projects using appropriate first principle models. The extent of this capability should be determined by further research. However, as a minimum, the Corps should develop an integrated in-house capability with sufficient equipment, personnel, and expertise to adequately direct, control, and evaluate the design of Corps of Engineer nuclear construction projects.

83. AN ANALYSIS OF THE MANAGEMENT SYSTEM FOR THE CONCEPT FORMULATION OF MAJOR ARMY DEVELOPMENT PROJECTS, by Major J. D. Reed, USA, 129 p.

The study determines the adequacy of the present management system used within the Department of the Army, the Army Materiel Command, and the Combat Developments Command for directing the concept formulation phase of major research and development projects. A brief historical summary of the development of the current organization for research and development was made. A detailed review was made of the combat developments and materiel development processes and the life cycle management model. The life cycle management models established by the two commands were combined into one model and an estimate was made of the time required to complete the prerequisites to contract definition. A method was developed for reducing the time required for completing these prerequisites and the concept formulation phase.

During the research planning phase of concept formulation, the lack of a single, clearly defined interface between the CDC Institute of Combined Arms and Support and the Army Materiel Command inhibits mutual coordination and the exchange of information between the two commands. Location of a liaison office from the Advanced Materiel Concepts Agency with the Institute of Combined Arms and Support to serve as a point of contact between the two commands was recommended.

Results of a survey of Army Materiel Command and CDC subordinates indicated that subordinate elements of the Combat Developments Command regarded the life cycle management model as a formal procedure for completing the objectives of concept formulation. If this is the case, the time required for

formal coordination between the two commands during the system definition subphase of the model is excessive and makes impossible the completion of the concept formulation objectives in the recommended time of two years. Development time can be reduced by as much as one year if a joint coordination team composed of elements of the CDC branch or functional agency and the AMC commodity command is established to coordinate and direct the actions of both commands during the system definition subphase.

84. MILITARY OPERATIONS ON THE SURFACE OF AN EXTRATERRESTRIAL BODY, by Major R. L. Reynard, USA, 90 p.

The great potential of space exploration can best be realized through peaceful cooperation among nations. Unfortunately, history indicates that a balance-of-power is a more effective regulator of international competition than treaties proclaiming peaceful intent. Therefore, the United States must be prepared to project military power into space to protect United States extraterrestrial bases and insure freedom of action in space.

The purpose of this thesis is to investigate the conduct of some types of military operations on the surface of an exterrestrial body by (1) examining the possible environments in which these operations will be conducted; (2) defining the threat and the resources available to counter the threat; and (3) integrating the considerations of environment, mission and available resources with current military doctrine to envision principles and operational concepts applicable to a military force on an extraterrestrial body.

Very little information is available on this specific subject. Therefore, the primary method of investigation was to integrate the abundance of applicable material available in both the fields of military science and space science, and extend this data to the environment of future military operations on an extraterrestrial body.

Since the conduct of military operations on an extraterrestrial body will be uniquely dependent on the physical environment of that body, possible operational areas were surveyed relative to militarily significant physical properties such as extent and composition of the atmosphere, surface temperature, gravitational attraction and gross terrain features. The planets, natural satellites and asteroids were examined to determine the possibility and feasibility of operations on their surfaces.

As the United States develops extraterrestrial bases for exploratory, scientific and eventually industrial purposes, military personnel will be involved in many support functions. However, their primary mission will be to defend these bases and to protect the United States from any attack originating in space. The degree of military effort required will depend upon the threat. This threat could be posed by either a rival Earth-nation with similar space capability, or by an extraterrestrial civilization. A description of these threats leads into a discussion of the organization of the military space effort including command structure, operational elements and logistic requirements.

Operational concepts were then investigated, particularly with regard to the application of Earth-developed principles and doctrine to the extraterrestrial environment. These concepts were applied to the operational elements to envision the tactical organization and equipment necessary at this level to accomplish their most likely missions. The planning necessary for the employment of such forces was covered in the context of the military problem solving technique.

This study concludes that although the United States should continue to strive for peaceful cooperation in space the best guarantee of peace will be an effective military space capability. Planning should be instituted for a united space command to control all forces operating beyond the Earth's appreciable atmosphere. The Army would be responsible for all operations conducted on the surface of extraterrestrial bodies. These operations would be conducted by small detachments organized and equipped to meet the particular requirements of their mission and environment. The principles and much of the doctrine used by terrestrial forces would be applicable to extraterrestrial operations.

The creation and maintenance of extraterrestrial military force in loco may not be politically or financially feasible prior to the materialization of a threat, but the lead time required to create such a force can be significantly reduced by planning for it now.

88. THE RELATIONSHIP BETWEEN THE POSITIONAL ACCURACY REQUIREMENTS OF MILITARY TOPOGRAPHIC PRODUCTS AND ARTILLERY WEAPONS SYSTEMS EFFECTIVENESS, by Major R. A. Schow, Jr., USA, 53 p.

The thesis seeks to establish a definitive relationship between artillery weapon systems effectiveness and the positional accuracy of supporting topographic products. Precise knowledge of the positions of a weapons system and the engaged target is essential to the timely and efficient employment of artillery fires. The accuracy requirement for positional data must be carefully developed. It would be neither practical nor economical to produce these data to an accuracy greater than needed, but insufficient accuracy to achieve some reasonable level of weapons effectiveness is clearly not acceptable either.

Very little pertinent literature is available with regard to the problem. A more substantial source of information exists in the collateral field of target acquisition and location. Several studies are available which provide sufficient basis for the desired relationship between positional accuracy and effectiveness and permit the derivation of preliminary quantitative results.

The most comprehensive of the references consulted was "A Study of Target Location Accuracy Requirements for Artillery Weapons-Army, 1975" produced by the U.S. Army Combat Developments Command, and some preliminary papers to that study from the Artillery Agency at Fort Sill. A USACDC study provides a logical method for establishing a criterion of artillery effectiveness based on an allowable degree of effects degradation due to position error of .10.

This criterion results from an analysis of the impact of effects degradation on the probability of defeating a target. Changes in weapon effects are directly proportional to changes in coverage of the target by the effects pattern resulting from horizontal position error of the target. The coverage of a target resulting from delivery system error and a fixed survey error is considered the best case. The relative degradation resulting from horizontal position error is derived.

Vertical position error can be seen by projecting its effect into the horizontal plane through the angle of fall of the artillery rounds. The sources of position error may be treated in a more general fashion to include all errors, regardless of source, in the positions of the target and firing unit rather than the fixed survey error and horizontal target location error considered by the USACDC study.

The USACDC method was applied to a 155mm howitzer battery firing at a 150 meter radius personnel target. This experiment showed that an allowable position error, in consonance with the .10 reduction in effects criterion, can be derived, and conversely, that the impact of any given position error can be evaluated in terms of degraded effectiveness and/or increased ammunition expenditure.

The summarized quantitative results of the USACDC study, which considered the entire family of artillery weapons firing against a typical anticipated battlefield target array, should be modified to reflect the more general approach to the sources of position error. Applying some judgment to the range of values generated, a preliminary estimate of the allowable position error corresponding to the .10 reduction in effects criterion was derived amounting to 55 meters (CD .90). It should be emphasized that this value must represent the statistical sum of <u>all</u> horizontal and vertical components of position error in both the delivery system and the target.

The derived error was considered 1) with regard to current military topographic capabilities in the production of maps and surveys and 2) with regard to potential improvements in these capabilities as represented by existing research and development activities.

It was concluded that:

1. The desired relationship between artillery effectiveness and the position accuracy of topographic products has been established.

2. An initial estimate of total allowable position error is 55 meters (CE .90), including all horizontal and vertical components of error in the positions of the firing unit and the target.

3. Current topographic support capabilities do not satisfy the derived requirement.

4. Future topographic support systems under study and development have the potential for satisfying the requirement.

86. A STUDY OF ETHNOCENTRISM AMONG WHITE PROFESSIONAL MILITARY OFFICERS, by LTC S. R. Shalala, USA, 180 p.

The investigation sought to discover the presence of ethnocentric tendencies of white professional military officers toward the Negro and to identify the specific nature of such ethnocentrism.

Because either an executive order or directive from the Pentagon was required to end outward discrimination toward the Negro in the military, it was assumed that there was no meaningful movement from within the Army structure to break with the "tradition" of segregation. It was, also reasonable to assume that with traditional segregation came traditional attitudes. These traditional attitudes were assumed to be negative and their presence caused various degrees of dissonance among whites who were required by law to treat the Negro equally. It was finally assumed that despite any number of laws or directives requiring equal treatment, there were means available whereby white personnel could continue to practice discrimination against Negro personnel.

Conceptualizing attitude as a process containing three basic functions (cognitions, affect, and conation), an attitude scale of three subtests was designed based on the Likert method. It was administered to a 100 white officer sample group of the 1968-1969 class of the US Army Command and General Staff College. The purpose of the cognitive, affective, and conative subtests was to locate each member of the sample on a 5-point attitude continuum ranging from "strongly positive" to "strongly negative." Attitude scale items were derived from a large collection of ethnic statements recorded. Additionally, one subtest used a situation-reaction technique that posed an ethnic situation and then described two reactions: an effective response and a conative response. Each respondent was to indicate his agreement with each of the two reactions on the 5-point continuum.

The standard Bogardus Social Distance Scale, then administered to the sample, revealed the order in which participants preferred to rank 11 ethnic groups (Negros included) with respect to selected social relationships. Follow-up interviews were conducted with 60 of the 100 respondents.

Treating the ethnic attitude in segments permitted the discovery of relationships among the three components of attitude. Values assigned to each point on the response continuum permitted the formation of tolerance subgroups. Since all items and reactions were monotonically structured, each respondent's attitude was consistently represented on the same side of the scale regardless of the component being examined.

There was no wholesale stereotyping of the Negro by the sample except for those who were subgrouped as strongly intolerant. There was, however, much selective stereotyping, mostly dealing in matters of interethnic sexual relations. It was apparent from the situation-reaction test scores that the sample had strong negative feelings about the Negro in most of the situations presented, but these strong feelings did not materialize into a willingness to act in a commensurately hostile way toward the Negro. In sum, the sample's

ethnic attitude displayed conative imbalance in relation to its balanced cognitions and affect. The sample consisted solely of officers in the United States Army. Thus, certain environmental variables could be said to be relatively homogeneous, given an official standard of conduct toward all ethnic groups. The samples high conative scores seem to indicate a relatively high degree of conformity to the social standards dictated by specific Army policy and regulation. On the other hand, a lack of sensitivity to regulations with regard to beliefs and feelings was found in the sample. Thus, this investigation indicated that the environment, in which attitudes exist and are maintained, permits a divergency of beliefs and practice and fosters an imbalance of ethnocentric attitudes. However, it must be noted that since internal dispositions in themselves do not constitute discrimination, such dispositions are not of prime concern in determining the official policy of the Army or the degree of discrimination actually practiced by its officers.

87. AN ANALYSIS OF THE READABILITY OF THREE ARMY MAGAZINES, by LTC V. J. Smith, USA, 47 p.

This study was conducted to determine the appropriateness of the readability levels of Army Digest, Infantry, and Military Review for their intended audiences.

Readability formulas provide an estimation of the reading difficulty of written materials in terms of educational grades, numerical ratings, or by placement of tested materials in categories of magazines that have been rated on a scale of easy-to-hard reading. However, although useful devices, they do have limitations. A formula only measures the difficulty of style and does not consider the important reading factors of format, organization, and content. A formula was devised using certain written materials as criteria; it follows, then, that the accuracy of their use would depend on the similarity of the tested material to the criteria.

Because of its ease of application, the Fry Readability Graph was used to evaluate the readability levels of Army Digest and Infantry. However, since the graph only provides results in educational levels from sixth grade to college level, it was necessary to use another formula for Military Review. Gunning's formula was selected bacause of its comparative ease of application. In addition to the grade levels provided by Gunning's formula, the Powers and Ross nomogram was used with Gunning's formula to show the comparative relation of articles from Military Review with different categories of "civilian" magazines.

The sampling method used was analysis of 100-word passages taken from near the beginning, middle, and end of an article. This procedure was applied to 94 articles in five issues of Army Digest, 40 in five issues of Infantry, and 55 from five issues of Military Review. To obtain an additional perspective for Military Review, 12 articles from U.S. Naval Institute Proceedings and 14 from Army were examined and grade placements compared.

The target audiences of the three magazines were identified by their military ranks. Comparison of the educational grade levels that resulted

from use of the formulas with the military ranks of the audiences was made by using the educational level of each military rank in the Army as reported by Department of the Army.

Based on research of the literature and applications of formulas, the analysis revealed that the readability levels of the three magazines were appropriate for their audiences. However, in the course of five issues, each magazine contained several articles that appeared to be too difficult for their intended audience and that could have been written at more readable levels. Also, it was found that the readability levels of Military Review compared favorably with those of Army and U.S. Naval Institute Proceedings.

Several conclusions of the study are significant. The weaknesses inherent in formulas were magnified when applied to specialized areas, such as the military. There are several ways to overcome this problem. The first is to standardize an existing formula using military materials. The use of such developments as the Cloze readability procedure permits a highly valid measurement of the comprehension difficulties of written matter. A second involves the development of an Army readability formula. Such a formula could be developed with the aid of automatic data processing equipment. By using Army magazines, field manuals, or other materials as criteria, an accurate and practical formula would result. When considering the amount of material published by the Army and the need for upper level managers to communicate with over a million soldiers of diverse reading abilities, the effort and expense of developing a practical formula for Army use is worthwhile.

Readability formulas are not employed by the staffs of Army Digest, Infantry, or Military Review. The results of this study suggest that their use would be beneficial to the magazines. They are not a substitution for the experience of an editor, but they are a helpful adjunct. It has been established that an individual cannot rank written materials in order of their difficulty, but a formula can. Frequently, subject matter is the overriding consideration for selection of an article for publication; but a formula may indicate a level of writing difficulty that would make the subject matter a secondary consideration in selection. At least, the formula would suggest whether or not some rewriting of articles was necessary for their publication.

88. A STUDY TO DETERMINE THE BEST METHOD OF UPDATING THE INERTIAL NAVIGATION SYSTEM IN VIETNAM FROM THE AVIATORS' STANDPOINT, by LTC J. P. Brown, USA, 100 p.

The purpose of this thesis is to evaluate various means of updating the inertial navigation system to determine, solely upon the aviator's standpoint, the most suitable and most practical method or methods to be used while flying fixed wing reconnaissance aircraft in Vietnam.

The five methods considered were visual, TACAN (Rho Theta), TACAN (Rho Rho), LORAN C, and Doppler. The discussion of the visual method included a description of four aircraft configurations suitable for use in the visual updating maneuver. Influencing factors for the use of the visual method covered meteorology, maps and charts, and aircrew orientation and aircraft positioning. The discussions of the other four methods included description,

principles of operation, limitations on use, accuracy, and availability of essential ground stations or airborne equipment.

Analyses of the five systems were made by describing each updating system as it might apply to a typical reconnaissance mission. Variations required, because of equipment nature brought out by a particular system, were discussed. A comparison of the range accuracies to be anticipated, limitations, tactical considerations, coverage of each method was made.

In conclusion, it is held that the best solution is to update the inertial navigation system automatically with LORAN C equipment and to have a visual means as a backup method.

89. COMMUNIST ATTEMPT TO CONVERT COLUMBIAN RURAL VIOLENCE INTO INSURGENCY DURING 1948-66: STUDY OF A FAILURE, by LTC R. E. Downen, USA, 194 p.

The objective of this paper is to adequately explain why the communists did not successfully exploit what appeared to be an incipient violent revolution in Columbia. Major reasons for doing this are to shed light on communist prospects for future success and to identify effective countermeasures.

Columbia has been plagued, since 1948, with rural violence (known as la Violencia) on a scale unparalleled in the remainder of Latin America. Its most virulent outward manifestations included mass murders of entire communities; best estimates place the death toll at between 150,000 and 175,000. The phenomenon was originally sparked by longstanding differences between the traditional Liberal and Conservative parties. Peasants and inhabitants of the small towns have, from the beginning, been the principle protagonists and victims.

Colombian communists have been active, since the early 1930's, in attempts to infiltrate Colombian social and political institutions. The Colombian Communist Party, which has never numbered more than a few thousand, tried in the late 1940's to capitalize on the radical Liberal reform movement of Gaitan. Communist elements were quick to exploit the situation which, in 1948, arose when Gaitan was assassinated. Their main objective appeared to be to foment and gain control of urban insurrection. The Communist Party does not seem to have been prepared for the explosion of peasant (campesino) unrest and rural guerrilla warfare. Nonetheless, the decade of the fifties did see a growth of several communist enclaves in rural areas. Local communists spread the gospel of self-defense (auto-defense) among various campesino groups.

The rise of Fidel Castro impacted strongly on rural insurgency in Colombia. Castro's success caused the proliferation of numerous new pro-communist organizations. These groups appealed to revolutionary students, professional people, and intellectuals. However, they were, in general, not responsive to orthodox communist leadership and did not subscribe to Castro's messianic approach to guerrilla warfare.

The fundamental questions that this research addresses are:

1. Were rural violence and unrest exploitable by communists in the Colombian social context, or was the society fundamentally immune to communist revolutionary leadership?

2. Did the communists have the capability and desire to exploit rural unrest? Did they regard guerrilla warfare as a crucial endeavor and attempt to use it to generate an insurgent war (war of national liberation)?

3. Was communist failure in Colombia related to mistakes and lack of unity within the revolutionary movement itself?

Because la Violencia was a rural phenomenon, a protracted insurgency appeared to have been the most feasible route to power for the communists. The liberal PCC's, not having control initially of the principal guerrilla forces, did not prevent that party from entertaining hopes of gaining ultimate domination. However, the diffused and uncoordinated nature of la Violencia defied centralized direction.

Most crucial to this thesis was why the communists did not succeed in filling the leadership vacuum that appeared in strife-torn rural Colombia. They attempted to do so repeatedly, as was shown by their efforts in establishing self-defense forces and in organizing for the 1953 National Guerrilla Conference. However, the limited objectives for which the Liberal guerrillas fought were amply demonstrated by the speedy acceptance of the amnesty offered by Rojas, a conservative dictator.

The thesis developed by this research is that Colombian social values, especially those of the peasants, were the primary cause of Castroist communist failures to develop an insurgent war under their control during 1948-66. This was in spite of the nation's ripeness for civil war prior to 1953, and high vulnerability to insurgency until after 1958.

In the Colombian environment, the communists were not able to establish a credible position with respect to the very real grievances that divided society. The strong revolutionary tides that did exist were running in the direction of the populism of Gaitan or Gomez's falangism. The viability of non-Marxist currents can be seen in the ability of a discredited Rojas Pinilla to return from political defeat and rally disaffected elements of rural and urban masses more effectively than could a liberal PCC after thirty years of continuous effort.

Although Castroists' prospects were best before Fidel Castro formally established his dictatorship in Cuba, Castro's early slogans were not much different than Gaitan's, a liberal martyr of the early 1950's. However, once Castroism became identified as a form of communist, it lost mass appeal. However, this thesis does not deny the possibility that a populist leader might be able to launch a viable non-communist rural insurgency and then betray it to communism after gaining power.

90. A STUDY OF THE ARMY AVIATOR RETENTION PROBLEM, by LTC W. C. Goodwin, USA, 99 p.

Successful combat operations in Southeast Asia have confirmed the major role the U.S. Army helicopter will assume in future conflicts of this nature. Concurrent with the acceptance of the airmobile concept, the annual requirement for Army aviators has increased from 1551 in FY 1966 to a total of 7320 for FY 1969. As the pilot requirements have steadily increased, the retention rate for aviators, extending beyond the three year obligated tour, has steadily decreased from 65 percent in FY 1965 to approximately 30 percent today. At present retention rates the U.S. Army will lose 5124 of the 7320 aviators trained in FY 1969 at the completion of the obligated service period. This loss, based upon an individual training cost of $90,000.00, is in excess of $461,000,000.00.

To initiate the study of this problem, contact was established with leading Army aviation personnel to ascertain the present status of research in this area. Three questionnaires were constructed and directed at 411 high school seniors in the Kansas City area, 331 warrant officer aviator candidates in the second phase of flight training at Fort Rucker, Alabama, and 180 senior Army aviators attending the 1968-69 Regular Course at the Command and General Staff College at Fort Leavenworth, Kansas. A study, conducted by the Human Resources Research Office in 1966, was used to furnish the data for the 1957 warrant officer aviators that constituted a last target group.

Partial results of this study indicated the following:

High School Seniors - 93.5% of these students had not received a military aviation briefing. 77% of the seniors polled would like to fly in an Army helicopter, and the majority would elect to serve in the U.S. Navy if drafted. The average weekly pay desired, following the completion of school, was $150.00.

Warrant Officer Candidate - Less than one in five had heard of the aviation program from an Army recruiter. Fifty percent recommended more money as the primary measure needed to improve the program. Fifty nine percent stated that W-5 and W-6 warrant officer ranks would definitely influence any decision to leave the service, and a substantial number recommended the standards of flight school applicants should be raised.

Warrant Officer Aviators - Inadequate pay was a prime factor in a decision to leave the service. The probability of an individual leaving the service increases with an increase in education, sixty percent of those leaving the service would consider staying for W-5 and W-6 ranks. Wives had a marked influence upon decisions to leave the service.

Senior Army Aviators - The "desire to fly" was the primary motivational factor that influenced entrance into the flight program. Disparity of branch and career assignments was identified as the basic shortcoming of an aviation career. Increasing pay was listed as most effective measure to reduce aviator attrition. Only eight percent favored training enlisted aviators and 81 percent favored the adoption of some form of bonus pay plan.

Based upon the information contained in this study the following conclusions were reached:

1. A basic "desire to fly" is the primary motivational factor behind the initial entrance into a military flight training program.

2. More money in the form of one or more of the following proposals would have a major effect upon improving the current retention picture:

a. Adequate bonus pay policy.

b. Equate the warrant officer and commissioned officers flight pay.

c. Overall increase in flight pay rates.

3. Today's recruiting competition from commercial airlines is not a primary factor in the loss of military pilots at the completion of their obligated service.

4. The creation of the W-5 and W-6 warrant officer "super grades" would have a significant effect on reducing the Army warrant officer attrition rate.

5. Standardization exit interviews are not being conducted for Army aviators leaving the service. Such interviews should be made.

91. A STUDY OF THE EFFECT OF A REDUCTION IN THE MILITARY BUDGET FOR SOUTHEAST ASIA ON THE LEVEL OF EMPLOYMENT IN THE UNITED STATES, by Major P. K. Bomersheim, USA, 155 p.

The reduction in United States defense spending for Southeast Asia can be expected to create a rise in the number of unemployed in this country. The exact number will, of course, depend on many variables, to include the size and rate of the reduction. It is estimated that 374,000 persons would be unemployed, resulting from an assumed $20 billion reduction in defense spending, spread over an 18 month period. Therefore, the United States must prepare for a successful transition. This must be well-timed and is essential to maintain a high level of demand. After the initial transition period it should be possible to plan for a moderate federal budget surplus in order to supplement the private savings available for private investment.

The purpose of this study is to investigate what effect a decrease in defense spending for Southeast Asia will have on employment and what measures should be taken to offset any decrease in employment brought about by an end to the hostilities. This is accomplished by an evaluation of the sharp increase in United States expenditures for Vietnam and the resultant increase in defense generated employment. Conversely, this is also the employment which is most likely to be affected by a reduction in defense spending.

The military expenditures rose to $75.4 billion in fiscal 1968, thereby creating an estimated 74,000 jobs per billion dollars spent. Directly attributed to Vietnam was approximately $30 billion and 1.5 million jobs. Four out of ten of these new jobs were in the ordnance, aircraft, and transportation industries and are the ones most likely to be affected by reduced spending. The nation has suffered from strong inflationary pressures and an unfortunate impact on plant and equipment investment, on housing and on the balance of payments.

The primary goal in the transition is to maintain a stable economy. The initial offset measures should include promptly terminating the temporary tax increases enacted to finance current defense spending and update the public and private programs deferred because of the conflict in Southeast Asia.

92. AN ANALYSIS OF THE PSYCHOLOGICAL NECESSITY OF CENSORSHIP IN COMBAT ZONES, by Major J. E. Longhofer, USA, 170 p.

The primary purpose of this study was to examine the historical evolution of news censorship in the United States, the current military information policy in Vietnam, and media performance in reporting selected crisis combat events of the Vietnam conflict, in order to determine the necessity of censorship in the area of combat operations during periods of low intensity warfare. A secondary purpose was to explore the psychological effects of media performance, as established, on the national will to persist in this form of conflict.

A content analysis was conducted of two combat actions, the Tet Offensive and Ap Bia mountain (commonly referred to as Hamburger Hill), as reported in The New York Times, The San Francisco Chronicle, and The Kansas City Star. First, three criticisms (position reporting, uninformed reporting, and erroneous reporting) were noted, as indicated in previous research, and, criteria within these areas were then postulated in an attempt to systematically analyze the news content. This intuitive formulation of criteria for analysis was necessary as there is presently no scientific model for news analysis, and the critical need for investigation of this area demanded, despite the dangers inherent in the present attempt, an immediate effort without waiting for the precision contained in the classical experimental design.

Results of the content analysis indicated a significant amount of position reporting in the three newspapers examined. Each newspaper, in varying degrees, engaged in position reporting (assuming a prior position and then reporting or putting undue stress and emphasis only on those events that support that position) of the Tet Offensive during the period January 30 - February 14, 1968, and the battle of Ap Bia mountain during the period May 19 - May 29, 1969. As determined by this study, there were no cases of uninformed or erroneous reporting during these periods.

Further, the effect of this position reporting on the national will to persist in low intensity warfare was considered by postulating inadequate socialization and peer group pressures in casual relationships with the media's behavioral reinforcing capabilities. However, solid experimental evidence of mass group effect is lacking and, consequently, no firm conclusions were possible in this area.

In the consideration of establishing censorship, further study of all media forms, in an expanded view of additional combat events, is necessary before full field press censorship can be unequivocally recommended. Strong emphasis must be given in future studies to refining and strengthening the criteria utilized. It is essential, in an area of investigation where the methods of analysis may be questionable, that the criteria be closely examined for validity.

In conclusion, the value of this study is in the finding, from the criteria established, that the selected newspapers have engaged in position reporting. Without question, further study is critically needed in the area of scientific models for news analysis whereby evaluative criteria become standard both for the journalistic profession and the layman. This subjective area, which has a tremendous potential in the formulation of public opinion, demands a scientific approach because of its possible reinforcing effect on the national will to persist, in pursuit of our vital national interests, in the conduct of low intensity warfare.

93. SHILOH: A CASE STUDY IN SURPRISE, by Major W. J. McCaffrey, USA, 139 p.

The commander must remain ever vigilant against surprise, for attacks born of the unexpected have the potential of altering quickly and irreversibly the relative combat power of opposing forces. A commander is better prepared to meet this threat when he is familiar with those factors which have contributed to surprise during past conflicts. This thesis investigates the surprise phenomenon through a case study of the battle at Shiloh Church.

During the American Civil War General Ulysses S. Grant bivouacked his army near Shiloh Church on the Tennessee River's west bank while he awaited General Don Carlos Buell and the Army of the Ohio. On Buell's arrival the combined armies were to attack Corinth, Mississippi, where the Confederate forces under General Albert Sidney Johnston were known to be entrenched. Realizing the combined strength of the two Union armies would eventually prove overwhelming, General Johnston decided to attack Grant's position before Buell could reinforce. He, therefore, attacked early Sunday morning, 6 April 1862. Apparently unaware that an attack was imminent, Grant had encamped his army with little regard for defense. The Confederates enjoyed success and forced the Union army against the Tennessee River. However, Buell reinforced Grant that evening, and on the following day the Union armies counterattacked and drove the Confederates back toward Corinth. Thus, the battle ended on a rather indecisive note.

The official records, letters, books, and memoirs of Union and Confederate participants were investigated to gain an understanding of the battle. The methodology adopted was a chronological approach which examined the pertinent events, circumstances, and errors relating to the battle. Through this means the investigation revealed the degree of surprise achieved by the Confederate attack and disclosed those elements which made surprise possible.

Among the more important conclusions of the thesis are:

1. Although the Union forces below division level anticipated the Confederate attack, Grant and his command echelon were completely surprised.

2. Surprise was achieved because the Union had violated several principles of war, chiefly: objective, offensive, maneuver, unity of command, and security.

3. The Confederates were not without fault, for, had certain mistakes been avoided, their army might have won a total victory.

94. INFRASTRUCTURE AND THE POWER SEIZURE: A STRUCTURAL FUNCTIONAL ANALYSIS OF THE BOLSHEVIK AND CHINESE COMMUNIST MODELS OF REVOLUTION, by Major A. P. O'Meara, Jr., USA, 183 p.

In this study the author examined the US Army doctrine to evaluate its adequacy for application to communist inspired Wars of National Liberation. The definitions of revolution from above and revolution from below, which appear in FM 31-23, are utilized by the author as a statement of current Army doctrine. Through an examination of the Bolshevik, Chinese Communist, Viet Minh, and Viet Cong revolutions the author demonstrates the need for additional definitions in order for the doctrine to demonstrate the characteristics of the four revolutions examined.

As a result of his analysis, the author concludes that additional conceptual tools, or definitions, are required in order to assist military personnel who are engaged in combating communist inspired revolutionary movements. These definitions are seen as fundamental requirements for commanders and their staffs to understand the complex and sophisticated methodology utilized to implement the communist revolutionary movement. The current definitions of revolution from above and revolution from below are seen as useful concepts, but a need is seen for them to be augmented by specific doctrine geared to explain communist inspired revolutionary movements.

In order to assist military personnel in understanding communist inspired revolutionary movements and the environments in which they occur, the author proposes two definitions. Those communist inspired revolutions patterned upon the Bolshevik Revolution are entitled explosive models of revolution. Those communist inspired revolutions patterned upon the Chinese Communist Revolution are entitled implosive models of revolution. Both definitions examine significant characteristics of the revolutionary models and address the power seizure in terms of the government and the state. The explosive model of revolution is defined as a revolutionary movement which captures the government and then expands to capture the state. The implosive model of revolution is defined as a revolutionary movement which captures the state through mobilization of the rural population which is followed by a massive attack to destroy the central government.

The author's method of analysis is based upon an examination of the organizations (structures) and their missions (functions) in the revolutionary movements. The study includes an examination of efforts to attack communist village level infrastructure in Vietnam. As a result of this field study in Vietnam a model of communist infrastructure at village level has been proposed for implosive models of revolution. The model of communist infrastructure at village level is included in the study.

95. AN ANALYSIS OF FACTORS ASSOCIATED WITH GUARD-PRISONER HOSTILITY AT THE U.S. DISCIPLINARY BARRACKS, by Major C. A. Hines, USA, 135 p.

A major problem facing the Armed Forces today is the correctional and rehabilitative treatment of military offenders. With this in mind, all personnel charged with the task of rebuilding and resocializing prisoners must

be capable of performing effectively in treatment-oriented facilities. For nearly one hundred years, the United States Disciplinary Barracks has been charged with the responsibility of rehabilitating long-term military prisoners. Throughout the years, this task has been accomplished with distinction, often setting the pace for the nation.

The success of treatment programs will depend to a large extent on the competence of guard personnel. Because guards have the most contact with the prisoner, their opportunity to positively or negatively affect rehabilitation must be recognized. The purpose of this study was to identify the type of guard least capable of performing effectively at the Disciplinary Barracks. The degree to which a guard expressed hostility toward prisoners or the operational environment, as measured by a questionnaire-survey, was the primary determinant for ineffective performance potential. To provide a means of identifying the hostile guard, several variables were considered. These variables were used to determine if similarities existed in the background, personality, or attitude of guards expressing a high degree of hostility. Two validated behavioral tests were used to complement the questionnaire-survey. They were the Srole Anomie Scale and the Edwards Personal Preference Schedule.

Research took the form of an exploratory study and was guided by the following questions:

1. How do guards high and low in expressed hostility differ in background, personality, attitude, and other traits?

2. What are the sources of these differences?

3. Are there any working or living conditions that affect guard hostility?

4. What means are available for identifying and screening guard personnel prior to their assignment to the United States Disciplinary Barracks?

5. What recommendations for further research can be made in this area?

One hundred and eighty-eight guards were tested, with thirty-one guards identified as high-hostiles, and twenty-nine as low-hostiles.

Analysis of data revealed that several differences existed between guards high in hostility and those low in hostility. These differences were the degree to which the guard was anomic and possessed certain personality traits. Anomia is a comprehensive term meaning despair, hopelessness, discouragement, personal disorganization, and alienation. Studies conducted in anomia reveal several deviant behavior traits; suicide, homicide, and prejudice are three of these traits. Personality traits, as measured by the Edwards Personal Preference Schedule, deemed significant in this study were affiliation, intraception, nurturance aggression, and exhibition.

High hostile guards were high in anomia, aggression, and exhibition. Low-hostile guards were high in nurturance intraception, and affiliation.

Whenever hostility was pronounced, anomia was high. Correspondingly, whenever hostility was low, anomia was low

A significant finding of this study was the enforcement orientation of high and low-hostile guards. Guards high in hostility were 'highly specific' in the enforcement of institutional rules. Hostile guards concentrated on the specific offense as opposed to the potential of the offense for large-scale violence. Low-hostile guards were "affectively neutral" in enforcement orientation, concentrating on offenses most detrimental to the overall security of the facility.

To assist in identifying hostile guards, a follow-on research questionnaire was designed. Through additional research, a typology of the hostile guard can be structured.

96. GRAPH THEORY - A MANAGEMENT TOOL FOR THE U.S. ARMY, by LTC J. R. Hocker, USA, 102 p.

The proposition of this thesis is that graph theory should be more widely used by the managers of the U.S. Army. It is a powerful and flexible tool which has been and is being thoroughly researched at the abstract level. Many useful theorems dealing with graphs exist. They need to be put to use. The hypothesis of this paper is that if graph theory is compared with the methods currently being used by the U.S. Army in solving several managerial problems, it will become apparent that graph theory is superior.

Numerous authoritative texts about graph theory provide background and historical information for this thesis. However, the primary sources for new concepts of utilization are the recent journals and papers which have been published not only in the mathematical and research fields, but also in the field of management.

Following a brief introduction to graph theory, three typical managerial problems which face the U.S. Army are investigated. They are a scheduling problem, a facility layout problem, and a transportation problem. The three problems are solved using techniques which are typical of those used by U.S. Army staffs. They are then solved using a graph theoretic approach. Finally, comparisons of the two techniques are made for each problem.

The finding of the study is that graph theory produces better results on some type problems than the techniques now being used. This study also finds that graph theory could be used as an additional approach to some problems to augment the methods now being used. There are additional areas which need to be explored, at the working level, in which graph theory could play an important role.

97. RADIATION EXPOSURE CONTROL ON THE NUCLEAR BATTLEFIELD, by LTC J. F. Ingman, USA, 119 p.

Ground forces operating in the nuclear environment will face exposure to radiation as a normal hazard of battle. Commanders must consider the effects of radiation on the combat efficiency of their units and their ability to accomplish assigned missions. Radiation will influence the commanders' decisions on the battlefield; a system of radiation exposure control is necessary to permit an evaluation of relative hazards. The fundamental requirements of a radiation exposure control system are the abilities to determine radiological status of a unit prior to exposure, to measure or predict any new dose to a unit prior to exposure, to measure or predict any new dose to a unit with accuracy, and to assess the effect of any new exposure upon the previous radiological status in terms of unit effectiveness. This, in turn, requires a method of determining basic radiation exposure data, a system of recording this data, and a system of utilization to permit assessment of the effect of subsequent radiation of unit effectiveness.

The capability of measuring radiation exposure is severely handicapped by the inability of the current tactical dosimeter, the IM-93/UD, to measure neutrons, a significant contributor to initial radiation. Since "type classification" of a replacement dosimeter is at least five years in the future, there is a requirement for an interim system which utilizes current measurement capability. The best approach appears to be the application of tabulated "neutron weighting factors" which, when multiplied by the gamma dose readings, will provide an indication of total dose. The distribution of dosimetric devices within units is subject to question and requires further analysis.

The system of recording, based on troop test experience, is judged to be adequate. The system for utilization of the measured and recorded data suffers from a serious defect. The de[illegible]nation of company and, particularly, of battalion radiation status provid[illegible] useful information for the commander and worse, may lead him to an incorrect conclusion. Since the battalion radiation status normally is the only radiation exposure information provided to brigade and division commanders, this deficiency is a serious problem. The addition of a fourth radiation status category, as proposed in a Combat Developments Command Institute of Nuclear Studies report, only serves to further complicate the current system. The best format of transmission of radiation exposure data to higher headquarters appears to be as the radiation status of the basic data-measuring unit, currently the platoon. This requirement for transmission of platoon data suggests consideration of basic reorganization of the combat structure with the platoon as the basic unit, attached to company headquarters based upon the requirements of the mission, to include anticipated radiation exposure.

Finally, a lack of detailed medical knowledge of the effects of radiation limits the validity of guidance provided by the radiation exposure control system. Lack of information on recovery from radiation injury prohibits valid assessment of residual injury from previous exposures, the effect of chronic or protracted doses, and the effect of recovery or repair in determining

future vulnerability. This limitation, along with lack of ability to accurately assess partial-body irradiation results in a system employing conservative medical criteria and relying heavily on the medical judgment of the surgeon, which in part must be based on close association with the exposed personnel. Recent centralization of battalion surgeons at division level appears to have potentially deleterious effect on the provision of required radiation advice to the battalion commander.

The overall conclusion of the thesis is that the current system of radiation exposure control is incapable of providing the commander on the nuclear battlefield with the required information.

98. AN ANALYSIS OF INCENTIVE CONTRACTS WITH RESPECT TO RISKS, by Major J. E. Jones, USA, 76 p.

This study discussed incentive contracts and cost overruns as related to industrial risk categories. The various aspects of risk considered by the Department of Defense had contract modifications as a common factor reflecting risk. Based on the average percentage of contract modifications, industrial commodity categories were rated in terms of risk. Statistical tests were performed that analyzed the tendency of incentive contracts, grouped by commodity categories, to overrun or underrun target costs. It was concluded that high risk commodity categories usually overran target costs. Methods of reducing risk were discussed.

99. A DETERMINATION OF THE OPTIMUM MODULATION TECHNIQUE FOR MOBILE AND MANPACKED MILITARY RADIO SETS, by Major J. E. Malmberg, USA, 116 p.

This study is undertaken to determine whether recent technological progress has resulted in the development of modulation techniques which are superior to frequency modulation for use with mobile or manpacked military radio sets.

A simplified model of the single channel communication system is developed. In this model the modulation process is considered in two steps. First, some form of speech processing is assumed to be performed. Various types of speech processing considered are clipping, amplitude limiting, filtering, sampling, coding, and vocoding. The second stage of modulation is considered to be the modulation of a radio frequency signal with the output of the speech processor. This model leads logically to a determination of the various possible modulation techniques.

Next, performance criteria are developed by considering the requirements of the military communications user and the limitations imposed by the military environment. These considerations result in the selection of spectrum utilization, signal to noise ratio, simplicity of operations, size and weight, reliability, and power required as the criteria to be used for the comparison of the various modulation techniques.

The modulation techniques considered in detail are amplitude modulation, single sideband, frequency modulation, pulse position modulation (AM), plus

code modulation (FM), differential pulse code modulation (FM), and vocoders (FM). Other techniques are considered briefly but are discarded when they are found to be inferior in some respect.

The spectrum utilization is computed for the modulation techniques in terms of the total density of nets which can be provided within a given amount of bandwidth and a given geographical area. The result shows that a vocoder system could improve on the present frequency modulation technique by a factor of three or more. Frequency modulation is also shown to be the best of the remaining modulation techniques as regards spectrum utilization.

The output signal to noise ratio of the various modulation techniques is compared for a wide-range of input signal to noise ratios and the results are presented graphically. The vocoder system is shown to be the only modulation technique that will provide an improvement in understandability over frequency modulation. The output signal to noise ratio of pulse code modulated systems is much better than frequency modulated systems, but only at such high output signal to noise ratios that both the frequency modulated and the pulse code modulated signals are almost perfectly understandable. Only the vocoder system provides an improvement over frequency modulation at the lower output signal to noise ratios where such improvement is significant.

The implications of the performance of the various modulation techniques and the complexity of circuitry involved are discussed to determine the relative performance of the various modulation techniques as regards size and weight, simplicity of operation, and reliability.

The results are presented as favoring a change from frequency modulation to some form of vocoder utilizing a frequency modulated pulse coded system.

100. DEPARTMENT OF DEFENSE INTELLIGENCE RESOURCE MANAGEMENT, by Major G. F. Mauk, USA, 150 p.

This thesis is an attempt to describe Department of Defense Intelligence Resource Management including the control and staff positions involved, the system through which resources are managed, and recent innovations in both, in order to contribute toward a clearer understanding of defense intelligence management. A second purpose is the identification of problem areas in defense intelligence management that deserve further study leading toward resolution.

The primary method employed in identifying positions and the system was library research of both classified and unclassified government publications, commercial publications and unpublished manuscripts and papers. This was supplemented, as required, by personal letters and telephone interviews with appropriate personnel in the Office of the Secretary of Defense and the Defense Intelligence Agency (DIA). To preclude security classification of the paper, unclassified testimony of appropriate government officials before congressional committees was relied upon as a basic source. The majority of documents examined were written within the ten years from 1961 to 1971; however, in determining origins for particular activities it was occasionally necessary to examine earlier publications.

In order to determine the source for allocation of resources to defense intelligence, it was necessary to examine the roles of organizations and individuals within the executive branch of Government external to the Department of Defense. Included in this examination were the President, the Office of Management and Budget, the Special Assistant to the President for National Security Affairs, the National Security Council, the Central Intelligence Agency, other members of the national intelligence community, and boards and committees directly concerned.

Within the Department of Defense, the roles played by the Secretary of Defense and the Office of Secretary of Defense were examined. Then the resource management functions of the subordinate DIA and the National Security Agency (NSA), and their relationship to the Office of the Secretary of Defense and to the military departments were scrutinized. This was followed by an examination of the roles of the military departments and of the resource management system itself. Finally, the reorganization recommended by the President's Blue Ribbon Defense Panel, and its impact on the intelligence resource management function were looked into.

The study determined that, below the level of the President, three organizations had a significant impact on intelligence resources management. The first of these, the Office of Management and Budget, formulates and disseminates after approval by the President, basic policy guidelines for the national budget. It has a significant impact on the determination of national security policy. Second, the President's Foreign Intelligence Advisory Board provides the President indpendent recommendations concerning the efficiency and effectiveness of all foreign intelligence activities. Third, the National Security Council and its subordinate organizations provide the primary vehicle for management of defense intelligence. Of particular importance are the Central Intelligence Agency, the United States Intelligence Board, the Defense Program Review Committee, and the National Intelligence Resources Board.

The study further determined that, within the Department of Defense, intelligence resource management at a level below the Secretary was centralized in the person of the Assistant Secretary of Defense, Administration (ASDA), beginning in 1969. Prior to this time, although DIA appeared to exercise this function, it in fact was not performed below the Secretary. Furthermore, the ASDA formally controls only resources and not operations, so that unified control of defense intelligence remains nonexistent below the level of the Secretary. The program managers for intelligence below the ASDA are the Directors of DIA and NSA, who control both resources and operations within their own agencies, and to a limited extent control intelligence resources and operations within the military departments. The Blue Ribbon Defense Panel has recommended significant changes in this system of control of intelligence resources and operations.

The intelligence resource management system instituted by the ASDA consists of the Consolidated Intelligence Resource Information System (CIRIS), the Consolidate Defense Intelligence Plan (CDIP), which the system produces, and the Five Year Intelligence Resource Plan, a portion of the Five Year Defense Plan which is updated annually by the CDIP through the Department of

Defense Planning, Programming, and Budgeting System. To the extent that CIRIS centralizes and simplifies intelligence resource management, it constitutes an improvement over the previous system. It still does not include all Department of Defense intelligence resources since tactical intelligence resources are excluded.

The study identifies numerous areas for further research, including application of CIRIS to tactical intelligence; cost effectiveness studies based on CIRIS, and organizational studies of intelligence at the Department of Defense, defense agency, military department, and unified command level.

101. CENTRALIZATION OF THE U.S. ARMY TELECOMMUNICATIONS COMPUTER PROGRAMMING EFFORT, by Major F. L. Mills, USA, 90 p.

The specific purpose of this thesis is to evaluate Army Telecommunications Automation concepts and determine the feasibility of the Army's establishing a centralized facility or organization for control and management of communications computer software.

Sources for this research were publications in the field, empirical data provided by the U.S. Air Force Communications Service, program concepts provided by the U.S. Navy Department of Communications, Automation Concepts provided by the U.S. Army Strategic Communications Command (USASTRATCOM), personal experiences of the author, and discussions with certain key individuals in the engineering field at USASTRATCOM.

Determining that centralization of automated telecommunications computer software effort is feasible resulted in several conclusions:

1. Considering technical and administrative factors and the trend toward increased utilization of computers for communications applications, there is a requirement in the U.S. Army for centralized control and management.

2. The Army Telecommunications Automation Program concept is feasible.

3. A long-range cost reduction will result by adoption of the U.S. Army's proposals.

4. Standardization will result.

5. Better analysis and definition of hardware and software will result.

6. Centralization will provide the U.S. Army with a pool of professional personnel.

The conclusions drawn from the study enabled the author to make several recommendations to accomplish centralization:

1. Responsibility for Army teleprocessing software support be vested in a single individual or agency.

2. Draw upon all available resources, military and private sector, in establishing a pool of qualified, professional analysts and programmers.

3. Use a mix of military effort and contractor assistance in attaining control and management of the total teleprocessing automation effort.

102. THE BAN ON BIOLOGICAL WEAPONS, by Major J. H. Ramsden, USA, 81 p.

On November 25, 1969, President Nixon made a major statement on United States chemical and biological warfare (CBW) policies. He re-affirmed the renunciation of the first use of lethal chemical agents and extended this policy to incapacitating chemical agents. He also banned the offensive use of lethal and incapacitating biological agents, promised the destruction of biological agent stockpiles, and confined biological research to defensive measures such as immunization. The President's announcement followed a six-month review of CBW policies by the National Security Council.

The policy statement met with generally favorable reaction in the United States and abroad. Although many people were uncertain as to why the President chose to ban biological weapons completely and not chemical weapons, such a significant unilateral step in the direction of arms control was felt to be a positive step toward peace.

The purpose of this unclassified study is to investigate the events that preceded the CBW policy statement in order to identify and evaluate the factors that contribute to the specific decision to ban biological weapons. Little has been written on why biological weapons were banned and it is hoped that this study will shed light on the reasons for the ban.

Essential background information and definitions on biological warfare concepts, historical precedent, international agreements, past United States policies, and the threat posed to the United States are necessary before a discussion of the specific factors. The factors behind the decision fall into three broad categories: domestic and international pressures, arms control considerations, and biological weapon employment problems.

The decade of the 1960's saw mounting domestic and international criticism of United States CBW policies. Sparked by the use of riot control agents and defoliants in Vietnam, the pressure, particularly from Congress, grew in intensity as a result of several accidents, most notably the killing of over 6,000 sheep near the Dugway Proving Ground, Utah, in March 1968. Procedures for testing, storage, and transportation of chemical and biological agents came under both domestic and international attack. Criticism reached a high point by mid-1969 and President Nixon ordered the National Security Council to conduct a complete review of United States CBW policies - the first major review in over fifteen years. During the period of this review international calls for CBW curbs increased, with the most significant being Great Britain's proposal to ban only biological weapons. This domestic and international pressure created a painful awareness in the Nixon Administration of existing and potential CBW problem areas. It was up to the National Security Council to suggest appropriate courses of action to alleviate this pressure.

Arms control considerations played a key role in the decision to ban biological weapons. By his words and actions during 1969, President Nixon made it clear that the United States would accept any feasible disarmament proposals. A unilateral ban of biological weapons offered a unique opportunity to hopefully halt biological weapon proliferation in an historic disarmament step without jeopardizing United States national security. Arms control objectives provided significant advantages to a course of action that involved a complete ban on biological weapons.

The many studies and reports, both domestic and international, on chemical and biological weapons clearly highlighted significant technical, military, and political problem areas in biological weapon employment concepts. The National Security Council determined that biological weapons were essentially first-use weapons not suited for retaliation. This contradicted the long-standing deterrent argument used to justify their inclusion in the United States weapon arsenal. In addition, their effects could be unpredictable and uncontrollable, a fact which diluted their military reliability and generated emotionalism and fear in the eyes of much of the world. Evidence indicates that in the mind of the President and a high level National Security Council spokesman, these employment problems were the final overriding factor which resulted in the decision to ban biological weapons.

Although only time will tell whether the decision was a wise one, the fact that the USSR has recently pledged to agree to a similar ban offers hope for significant arms control progress in the 1970's.

103. AN EVALUATION OF THE PERFORMANCE OF THE MEDICAL EXAMINATION FOR ENTRANCE INTO THE ARMED FORCES, by LTC D. L. Siegal, USA, 156 p.

The purposes of this study were to determine whether or not a medical examination of the form and scope prescribed by various regulations is performed on every individual processed for induction or enlistment into the Armed Forces, and to evaluate the professional satisfaction of the medical officers assigned to the Armed Forces examining and entrance stations (AFEES). In February 1971, a questionnaire was sent to the 139 medical officers assigned to the 74 AFEES. The 90 usable questionnaires returned represented a 64.7 percent response.

An analysis of the data obtained revealed that 60 respondents (66.7 percent) were of the opinion that a medical examination of the form and scope prescribed by regulations was not necessary for entry into the armed forces. The items most frequently recommended for elimination from the examination were nose, sinuses, mouth and throat, ophthalmoscopy, lungs and chest, abdomen and viscera, identifying body marks, scars, tattoos, dental examination, and serology. Further analysis revealed that there was a strong negative correlation between the items recommended for elimination and the items actually performed during the examination. There was a strong positive correlation between the portions of the examination actually performed by the 70 respondents who recommended changes in the examination and the portions of the examination actually performed by the remaining 30 respondents who did not recommend any changes in the examination.

A comparison of the major categories of disqualifying medical defects responsible for Existed Prior to Service (EPTS) discharges and the items omitted from the medical examination revealed that there was not a direct relationship between these two groups.

Sixty-four of the respondents indicated some degree of dissatisfaction with their assignment at an AFEES. The most common complaints from the respondents were that they were not practicing medicine and that they had too much administrative work. In addition, the comments infer that there is friction between the medical officers and their commanding officers.

The following conclusions were made: (1) an examination of the form and scope required by various regulations is not performed on every individual processed for induction or enlistment into the Armed Forces; (2) an adequate screening medical examination for entrance into the Armed Forces is performed; (3) the medical officers assigned to the AFEES are of the opinion that the time required to perform a medical examination of the form and scope required by regulations exceeds the time available; (4) the medical officers assigned to the AFEES have determined for themselves what items of the required examination should be eliminated from the examination and have then eliminated these items from the examination as they perform it; (5) the medical officers assigned to the AFEES believe that the medical examination performed for induction and enlistment should be referred to as a "screening examination", and, additionally, they believe the medical examination they perform is essentially a "screening examination;" (6) there is not a direct relationship between the portions of the medical examination omitted by the medical officers and the distribution of the disqualifying defects resulting in EPTS discharges of inductees and enlistees; and (7) the medical officers assigned to the AFEES are not professionally satisfied with their assignment.

Several recommendations were presented to assist in the alleviation of the problems revealed by this study.

104. A PROPOSED MATHEMATICAL MODEL FOR PREDICTING MILITARY ELECTRONIC EQUIPMENT COMPONENT FAILURE RATES AND ISOLATING UNDERLYING FAILURE CAUSES, by Major R. E. Starsman, USA, 157 p.

A mathematical expression for combining the entire failure rate curve is derived based on the assumption that the failure population is composed of three subpopulations, early, chance, and wearout. A graphical method is provided for separating the subpopulations and determining the parameters of the model. The expression is then applied to observed failure data in three detailed examples and in each case the model is shown to represent the observed data at the .05 significance level using the Kolmogorov-Smirnov Test. Two BASIC language computer programs are provided to simplify the use of the proposed model. The proposed expression is compared with techniques presently used to model failure data and is shown to be superior in three ways:

1. It is more accurate than methods presently in use.

2. Its greater flexibility permits the modeling of data which is beyond the capabilities of present failure modeling techniques.

3. The proposed model yields essential information for managers as well as theoreticians concerning failure periods and underlying failure causes, information which is obscured by present modeling methods.

105. U.S. ARMED FORCES BASE DEVELOPMENT EXPERIENCES IN ASIA, 1965-1969: A HISTORICAL REVIEW AND IMPLICATIONS FOR FUTURE BASE DEVELOPMENT ACTIONS, by Major A. J. Thiede, USA, 213 p.

This thesis examines recent American attitudes towards war; the role of construction in the theater of operations from World War I to present; present trends effecting future base development planning and execution; base development planning and execution in Vietnam, Thailand and Korea between 1965 and 1969; lessons learned from these experiences, the status of corrective actions and investigations; current joint and Services doctrine concerning base development; the Service functional component systems, including the Air Force's Bare Base Mobility Concept; and numerous automatic data processing systems adaptable to base development, including PRESCORE, STINGER and SIGMALOG.

These areas are investigated with a view toward providing a framework from which a joint, integrated system of base development planning and execution may be developed which incorporates pre-engineering, prefabricated, modular, relocatable structures as part of a joint functional components system to the utmost, and utilizes a joint automatic data processing system and streamlined contingency funding/programing and real estate acquisition procedures at all joint and Service levels to expedite actions and provide responsiveness.

The historical and descriptive research methods are used to present the data. A brief historical sketch is employed to show the general role of construction in the theater of operations; a more detailed historical development is given to highlight recent base development planning and execution in Asia. The descriptive method is used to present the other data.

As a consequence of the research, a joint, integrated system for base development planning and execution (the JIBES system) is presented to serve as a framework for further investigation and development. This system takes advantage of recently learned lessons concerning base development, and emphasizes the maximum use of the most modern technology available to the construction industry. Properly improved and developed, it should eliminate the deficiencies encountered in Vietnam and elsewhere, and reduce application of facilities and effort to a minimum.

Founded upon an examination of the available data, the following additional major conclusions are presented.

1. The United States will be involved in future contingency operations.

2. The prudent use of time will be more essential than ever in these operations.

3. These contingencies will tend to be of the fixed enclave variety, thus maximizing construction requirements.

4. Key recommendations of the Joint Logistics Review Board and the Special Military Construction Study Group not yet acted upon appear worthy of implementation; joint and Service doctrine should be revised accordingly.

5. The JIBES system proposed in the thesis provides a framework for development of a joint, integrated system for base development planning and execution which should be further pursued with a view toward improvement as needed and eventual implementation.

6. To effectively support a system like the JIBES, development of a joint functional component system and a joint ADP system is essential.

7. To increase responsiveness in a system like the JIBES, there is a crucial need for developing streamlined contingency funding and real estate procedures, and having supporting documents prepared prior to implementation of OPLANS.

8. Recent and continuing improvements in logistical concepts tend to reduce logistical requirements in a combat theater, but do not eliminate the need for forward depots, and increase the need for speed in construction and prestockage of War Reserve Materials.

9. Establishment of adequate, well-trained base development staffs at all joint and Service levels is imperative.

Based on the foregoing conclusions, the following recommendations are made.

1. Adoption and implementation by DOD/JCS of the key recommendations of the Joint Logistics Review Board and the Special Military Construction Study Group which have not as yet been acted upon.

2. Revision of DOD/JCS and Service regulations to incorporate the new concepts.

3. Establishment or designation of a joint group, responsive to the Construction Board for Contingency Operations, to develop a joint, integrated system for base development planning and execution suitable for use by all the Services and DOD/JCS in base development planning and execution. The JIBES should be used as a starting point for the investigation.

4. Establishment or designation of a similar group to make a joint, integrated functional components system operational to serve as the backbone of any joint planning and execution system developed.

5. Establishment or designation of another similar group to develop a joint, integrated automated data processing system to support any planning and execution system developed.

6. Establishment or designation of yet another group to develop streamlined contingency programing/funding and real estate acquisition procedures to make any planning and execution system developed more responsive.

7. Procurement and prestockage of sufficient functional components to insure early and substantial support of combat forces during at least the first six months of a "half-war" contingency.

8. Establishment of adequate base development staffs at all levels.

106. PUBLIC IMAGE OF THE MILITARY IN LEADING MAGAZINES, by Major E. A. Wilhelm, USA, 185 p.

The purpose of this thesis was to examine leading magazines and determine if they provided a balanced presentation of the military in terms of articles and excerpts published. The military affairs content of twenty-one general interest, large circulation magazines was analyzed and compared for the 1968-1970 time period to determine the balance of their coverage as well as that for individual magazines, separate military affairs topics and several specific types of coverage (letters, cartoons, book and movie reviews).

It was assumed that the content of the mass media both reflects and forms public opinion. The magazine segment of the media was selected for both methodological and practical reasons. The result of the content analysis was considered to indirectly reflect the status of the public image of the military for the time period examined.

The twenty-one magazines were selected on the basis of appropriate subject matter and circulation (greater than nine-hundred thousand). All military affairs subject material was generally included, with the exception of fiction and advertisements. The material was divided into six major subject areas (War, Military History, Vietnam War, Militarism, Personnel and Incidents) and thirty-seven subareas.

Two analysis units were used: articles, material covering one or more pages, and excerpts, material covering less than one page. All selected items were placed in one of four analysis categories: favorable, unfavorable, balanced, and neutral.

The overall results indicated an unfavorable imbalance of 12.8 percent. When circulation was included as a weighting factor the imbalance of item-issues rose to 14.5 percent. Exclusion of Vietnam War items and two separate modifications of the basic data to account for both the greater significance of articles versus excerpts and the relative academic value of the magazines provided little change in the overall results.

Grouping data for six month periods indicated a strong trend of increasing unfavorable imbalance, from 1.9 percent for July-December 1968 to 23.5 percent for July-December 1970.

Separate analysis of letters to the editor indicated no significant difference between this type of coverage and the total magazine coverage. These letters reflected in most instances the magazine's own editorial position. Examination of cartoons indicated that although they were generally unfavorable their use was too infrequent to represent a significant presentation of magazine editorial opinion.

The results for both movie and book reviews were heavily unfavorable when contrasted with those for the magazines. Considering these two types of coverage as representative of the book and movie media indicates that the magazine results, although unfavorable overall, still present an optimistic picture from a military point of view.

Three recommendations were made: to concentrate improvement on those facets of military affairs which received the most unfavorable magazine coverage, to make similar analyses for earlier periods in order to place the current data in a more meaningful context, and to use content analysis in conjunction with any future paid advertising campaigns.

107. MOVING PERSONNEL TARGETS AND THE INFANTRYMAN, by Major B. E. Wilson, USA, 95 p.

The need to include moving personnel target training in the U.S. Army rifle marksmanship training program was the problem addressed in this thesis. This need was investigated to determine if such training is necessary to properly prepare a rifleman for combat.

The initial phase of research was to review all current U.S. Army doctrine concerning rifle marksmanship training. The second phase was to review all previously conducted studies pertinent to rifle marksmanship. This established what had already been investigated and identified the actions taken as a result of the studies. The third phase was to determine the extent of moving personnel target training conducted by other U.S. organizations and by foreign countries. The final phase of research investigated the need for such training to determine if a valid requirement existed. This was accomplished through literature review and personal interviews with experienced soldiers.

The findings of the study indicated that current marksmanship training doctrine does not include any practical exercise nor live fire engagement of moving personnel targets during the training of an individual rifleman. The review of previously conducted investigations revealed that the need for moving personnel target training has been established in the past. However, it has never been implemented. The absence of action suggested the existence of a restriction not identified in the reports. Further review of associated studies tended to indicate the possible presence of engineering problems associated with the design, construction, operation, and maintenance of a moving target system.

The research further revealed that other U.S. Government organizations (Federal Bureau of Investigation and Marine Corps) and numerous foreign countries do conduct moving personnel target training. This finding indicated that the U.S. Army could feasibly conduct such training. The literature review and personal survey tended to support the presence of a valid need for moving target training. This was based on the expressed concern by most for the considered decline in marksmanship ability of the U.S. soldier.

The writer concluded a valid need for moving personnel target training does exist and the means to accomplish it is available.

108. ISSUES AND ANSWERS: THE U.S. ARMY COMMAND INFORMATION PROGRAM, by Major W. R. Arbogast, USA, 74 p.

The purpose of this thesis is to analyze the response of specified Command Information publications to the issues of dissent in the U.S. Army. Both descriptive and historical methods were used to conduct the research. The evolution of the U.S. Army Command Information Program from World War II until the present is treated. The issues involved in dissent by today's soldiers are presented by a review of the writings of some of the dissenters and of some six underground newspapers published during 1969-1970. The coverage of these issues by Army Digest and Commanders Call during 1970 is determined by a type of content analysis. The conclusions are that the Command Information Program suffers from a lack of research into the attitudes of today's soldiers and that the two publications, Army Digest and Commanders Call, do not provide sufficient coverage of the issues of dissent.

109. THE DEFENSE OF ANTWERP AGAINST THE V-1 MISSILE, by LTC R. J. Backus, USA, 96 p.

This thesis is an incomplete historical investigation of the World War II Allied defense of Antwerp, Belgium, against the German V-1 pilotless aircraft. The purpose is to establish the reasons for the defense's success and failure through an analysis of the defense in terms of the air defense engagement functions: detection, identification, interception, and destruction.

The V-1 missile originated in 1907 with the initial conception of a pulse-jet engine and culminated with test firings in the winter of 1942-43. The V-1's range was about 150 miles and it carried over 1,900 pounds of high explosives in its warhead.

The Germans initially employed the V-1 from launch sites in France aiming them at London. The British were prepared and after a shakedown period they established a formidable defense.

The Allied invasion of the European Continent and subsequent geographic gains caused a temporary lull in attacks against London. Logistical problems occurring in the continent threatened to halt offensive operations until the British 21 Army Group overran the port of Antwerp. This port promised to be a solution to the mounting supply difficulties. The Germans recognized Antwerp's significance to future Allied operations and took action to attack the city with the V-1 missile.

The Allies realized the German intent and established a defense primarily composed of U.S. antiaircraft units. The London experience had demonstrated the value of antiaircraft artillery and had exposed the weaknesses of a defense employing fighter aircraft.

The V-1 attacks began in October 1944 and ended in March 1945. During this time 4,883 V-1's were detected by the defense. More than 2,500 V-1's were designated as vital area threats. The defense destroyed over 70 percent of these. Only 211 landed within the designated vital area.

Detection was accomplished with a high degree of success. This is attributable to the characteristics of the V-1. It followed a constant heading at a constant speed and altitude. The defense was deployed accordingly.

The V-1 characteristics greatly simplified the identification problem. Visually the V-1 was readily identified during all hours of the day. Its flight characteristics made it immediately suspect to detection radar operators. Close control of Allied aircraft operating in the area helped the identification process.

Interception and destruction are inseparable for analysis purposes. The SCR-584 radar combined with the 90mm or 3.7 inch gun using proximity fused projectiles proved to be very effective against the V-1. The 40mm guns employed by both U.S. and British units were relatively ineffective due primarily to the ruggedness of the V-1 and the small explosive charge of the 40mm projectile.

The success of the Antwerp defense was unmatched during World War II. Interception was the least perfected of the four engagement functions.

110. A METHODOLOGY FOR WARGAMING STANO SYSTEMS, by LTC H. M. Conrad, USA, 55 p.

In the effort to develop an optimum surveillance, target acquisition, and night observation (STANO) system for integration into the Army, numerous studies must be conducted. Many of these studies will use some form of war gaming to provide the data necessary for discrimination between alternative systems. In developing war games or computer simulations to support the play of war games, systems analysts must derive methodologies which will allow the portrayal of STANO systems with the degree of accuracy required by the evaluation to be made.

This paper provides systems analysts with a general methodology which may be used in the evaluation of STANO systems. The methodology may be used in evaluating any desired variations in materiel, doctrine, organization, or environment. Although presented as an aid to war gaming, the methodology may prove useful to any researcher as a means of explaining the relationship of materiel, doctrine, and organization as they function in a STANO system.

111. CONSIDERATIONS IN THE DESIGN OF AN INFORMATION TRANSFER SUBSYSTEM FOR A TACTICAL INFORMATION SYSTEM, by Major J. M. Cothran, USA, 213 p.

Differences between civilian and tactical information systems in the areas of user service and available communications support make feasible the treatment of information transport facilities of a tactical information system as an entity. Hence, the purpose of this paper is to provide a guide for information system analysts, designers, and users in considering the desired qualities of an information transfer means to support a tactical information system.

Much of the research for this thesis was accomplished while working on related matters for the tactical operations system (TOS) and tactical fire direction system (TACFIRE) while the author was assigned to the U.S. Army Computer Systems Command. The remainder of the research was performed through search of available literature on digital communications and information input and display.

The ability to transfer information by telecommunications provides a means of taking information services to battlefield locations where information computers are not appropriate. However, the harshness of the electromagnetic environment on a modern battlefield limits the ability of telecommunications to transfer information. This tactical communication condition which reduces communications availability and quality provides the basis for the data processing operations that transport information between the elements of the tactical information system. User requirements for timely and responsive information input and display also play a major role in the operations and design of the information transfer subsystem. Further, examination of the impact of the information transfer subsystem on system integration shows that an efficient information transfer means coupled with distributed processing can be the key to system reliability and survivability.

112. THE DISSEMINATION OF ARMY PAY AND FRINGE BENEFITS INFORMATION TO ROTC CADETS AND JUNIOR OFFICERS, by Major J. M. Daley, USA, 113 p.

The adequacy and timeliness of the dissemination of Army pay and fringe benefits information to ROTC cadets and to junior ROTC officers is examined. The effect increased emphasis on the dissemination of financial information would have on career retention is explored.

To obtain data for this study, questionnaires were sent to college ROTC units, to Army schools conducting branch basic courses, and to ROTC officers attending selected basic courses. The responses to these questionnaires provided the information necessary to determine the amount of formal instruction presented. Lesson plans were requested, and the adequacy of the instruction was determined by reviewing the lesson plans submitted. The amount of literature issued on pay and fringe benefits was also ascertained from the questionnaires.

In addition to the original data obtained from questionnaires a review of the literature showed that pay and fringe benefits are important factors in career decisions, but are not the most important factors. This review also established the importance of providing the junior officer with information that may affect his career decision very early in his military career.

Existing guidance and requirements for the dissemination of pay and fringe benefits information are presented. This includes background information on the Army Information Program, the college ROTC program, and the Army school system. Career counseling and recruiting for ROTC are also addressed.

Each individual's knowledge of pay and fringe benefits, his opinion of the relative merits of Army and civilian compensation, his primary source of information on this subject, and the manner in which he would prefer to receive new information were all explored.

The relationship between an individual's knowledge of Army pay and fringe benefits and his opinion of the relative merits of Army and civilian compensation was investigated. The individual's opinion of the relative merits of Army and civilian compensation and the effect this has on pay and fringe benefits as a career retention factor were also tested.

Several conclusions were reached which relate to improvements necessary in the existing programs for the dissemination of pay and fringe benefits information.

It was determined that the channels exist for the proper dissemination of pay and fringe benefits information to ROTC cadets and to ROTC junior officers, however an integrated program to insure that each individual is informed in a timely manner of his pay and fringe benefits entitlements does not exist.

The permissive nature of existing guidance contributes to the limited effectiveness of current methods of disseminating pay and fringe benefits information.

The lack of a current, consolidated reference, which explains in simple language the existing Army pay and fringe benefits package and its equivalent monetary worth, contributes to the diverse coverage of this subject.

An effective means of insuring that individuals are apprised of changes to pay and fringe benefits which affect them does not exist. Most individuals would prefer to have this information mailed directly to them.

Additional conclusions were drawn on the effect increased emphasis on the dissemination of financial information would have on career retention.

The individual's opinion of the merits of Army pay and fringe benefits, relative to what he thinks is available to him in the civilian community, is independent of his knowledge of Army pay and fringe benefits.

The opinion of Army pay and fringe benefits improves during the first few months of commissioned service, and this opinion is highly correlated to the individual's opinion of pay and fringe benefits as career retention factors. Despite this, increased emphasis on the dissemination of pay and fringe benefits information will have little effect on the career retention of ROTC officers, since this factor is overridden by other unspecified factors in the final career decision.

113. EFFICIENCY REPORT INFLATION: A COMPARATIVE ANALYSIS OF U.S. ARMY AND SELECTED FOREIGN MILITARY OFFICER EVALUATION SYSTEMS, by Major R. L. Dilworth, USA, 224 p.

Efficiency report inflation has been a significant problem in the U.S. Army for more than 40 years. In 1945, 99 percent of the officer corps were receiving one of the two top ratings on the evaluative scale. Inflation has been partially responsible for the frequent changes in officer efficiency report (OER) format in recent years. Since the inflationary phenomenon hampers accurate identification of future leaders from the standpoint of comparative value and impinges on efficient management of officer assets, any easment of inflationary pressure can serve to improve personnel management within the U.S. Army.

To gain an appreciation of the inflation problem, isolate causal factors, and develop possible means of combating the problem, research was conducted in two broad areas. First, the history of the U.S. Army OER system was studied, including a survey of contemporary thought on the subject. A large segment of the Class of 1971 of the U.S. Army Command and General Staff College was asked to complete a questionnaire as part of the contemporary survey. Historical review revealed that inflation has not always been associated with the OER system of the U.S. Army. It also indicated that measures adopted to control inflation have been largely ineffective.

The second approach to research centered on evaluation of the OER systems currently in use by eight foreign military establishments. Research in this area proceeded from the premise that the military environment acts to shape the performance appraisal process. For this reason, investigation included analysis of the military framework associated with each OER system. The systems of the Canadian Forces, the French Army, the British Army, and the West German Armed Forces were singled out for primary analysis. The other four systems, covered in less detail, were those of the Australian Army, the Israeli Armed Forces, the Japanese Ground Self-Defense Forces, and the Yugoslav Armed Forces. In-depth interviews of senior foreign officers served as a key source of information in pursuing this portion of the research effort.

By comparison, efficiency report inflation was found to be much less pronounced in most of the foreign systems studied than in the U.S. Army's system. Almost all of the systems were found to employ measures specifically designed to control inflation. In addition to methodology calculated to reduce inflation, some less tangible factors, such as an officer corps conditioned by tradition to accept realistic ratings, appear to influence the level of inflation. A total of 15 basic techniques for controlling inflation were identified through review of foreign systems, most of them as yet untried by the U.S. Army.

The French Army is free of an OER inflation problem because of the forced ranking and forced distribution techniques being used. Canadian Forces have achieved control over inflation through application of firm centralized monitorship of the OER system. All eight foreign systems surveyed tie rating authority to command authority. In addition, five of the systems limit rating authority to field grade officers as a means of insuring that only experienced officers are entrusted with this responsibility.

Three basic conclusions of the research are that inflation can be controlled, the administrative environment within which the efficiency report operates is at least as important as performance appraisal techniques used, and certain foreign military OER techniques should be considered for adoption by the U.S. Army. The more critical of several specific recommendations are: (1) limit rating authority to officers occupying field grade positions, (2) design OER format and processing to make maximum use of automatic data processing, (3) impose administrative discipline through establishment of a central monitoring office at Department of the Army level, (4) provide for adjustment of ratings at Department of the Army level based on knowledge of rating trends and rater standards, (5) require commanders to monitor all reports initiated within their immediate commands, and (6) emphasize objectivity and integrity of reporting.

If any overall lesson can be gleaned from this study, it would probably be that the key to inflation control lies primarily in the administrative sector. Rather than becoming ensconced in performance appraisal methodology, greater stress needs to be given on how an OER system is administered.

114. THE UNIFIED LOGISTICS COMMAND CONCEPT - A CRITICAL ANALYSIS, by Major J. M. Gamino, USA, 77 p.

This study examines the military worth of the Unified Logistics Command concept as proposed by the Blue Ribbon Defense Panel in July 1970.

To establish a frame of reference, the author establishes an overview of the scope and complexity of Defense logistics operations and notes that the current critical climate for all things "military" has historical precedents in the post-World War II and post-Korean War periods. The author identifies the themes of "reducing duplication and waste" and the "need for increasing efficiency" as being recurrent ones of the various Government and Defense review commissions and panels since World War II. The history of armed forces unification is traced from its conceptual phase through the late 1960's in order to determine those areas in which logistics was an impetus to centralization. The author determines that, as early as the Congressional "unification hearings" of 1944, the need to improve logistics efficiency and reduce costs were strong factors underlying the demands for Service unification. Deficiencies in the original National Military Establishment and subsequent evolutions of the Department of Defense are reviewed in order to provide a backdrop against which the current Defense logistics organization evolved. The author studies the evolution of Defense logistics from the separate Service logistics systems of World War II to the semi-integrated DOD system that exists today. This examination reveals that the current Defense logistics system has slowly evolved toward one that is more centralized and

integrated but that the necessity for developing a common body of logistics policies, procedures, and techniques dictated an evolutionary rather than revolutionary approach.

The logistics system, as it exists today, is examined in all of its major components to include their missions and functions. Using this inventory, the author constructs a proposal for a unified logistics command along the broad outlines set forth by the Blue Ribbon Defense Panel, to include its major functions and basic organization. In analyzing the potential of the unified logistics command, the creation of a single command element to develop a DOD-wide ADP-oriented logistics system, are identified as the key advantages of the command. Conversely, the separation of the national inventory control points (NICPs) from their current technical bases, the separation of the programming and distribution functions, the disregard of Service doctrine and organization, the availability of viable alternatives, and the massive nature and inherent dislocations of such a reorganization are identified as key disadvantages.

The author concludes that the size and complexity of Defense logistics operations dictate a continued evolutionary approach towards a fully integrated Defense logistics system and that the Unified Logistics Command or similar Defense organization is not pertinent at this time. As prerequisites for a DOD-wide logistics organization, the author identifies six evolutionary steps which are required to create the common systems fabric and which continue the process of evolution. These are assignment of a depot maintenance mission to the Defense Supply Agency (DSA), assignment of CONUS depots to Defense agency, establishment of a system of Service cognizance depots and maintenance plants, chartering of a Defense logistics communications planning group, increasing the logistics authority of unified commanders and establishment of a Defense Transportation Agency. Each of these steps is proposed as the subject of a full study effort.

115. 'ALLIANCE AT ARMAGEDDON: FRANCO-BRITISH MILITARY COOPERATION, 1914-1918', by Major W. R. Griffiths, USA, 178 p.

The manner in which the Allied military forces of the First World War were coordinated has had an enormous influence upon subsequent alliance doctrines. The necessity for cooperative military efforts, the detailed coordination of all national resources, and the interaction of military decisions with the entire fabric of society were lessons painfully learned during the first total war. Yet, while these lessons are generally accepted, their actual application during the First World War has been distorted by the self-serving participants and observers who were outraged at the destruction and misery which accompanied the war.

The exact methods by which the Entente Powers controlled and coordinated their military might are examined herein. From informal and imprecise methods of personal diplomacy to the formal structure of the Supreme Allied War Council, four distinct periods of positive relationships existed.

During the first period, military cooperation was based upon the personal prestige of General Joseph Joffre. Joffre filled a vacuum in political leadership by influencing the military strategies of England, Russia, and Italy along coincidental lines.

In 1916, the political leaders reasserted their power and relieved Joffre. They further instituted a system of unity of command on the Western Front by subordinating the British commander, Field-Marshal Haig to the French Commander. This system soon failed and brought discredit upon the politicians who had devised it.

During the period which followed, little in the way of cooperative military effort was attempted. The Supreme Allied War Council, with its Board of Permanent Military Representatives, was instituted as a formal system to ensure positive military cooperation and political control in late 1917. However, the political limitations of the Council and the adamant opposition of the field commanders kept this organization from achieving its full potential.

Finally, after a series of military reverses, an overall commander of Allied forces--a Generalissimo--was named. The appointment of Marshal Foch over Field-Marshal Haig and General Petain was made only eight months before final victory. Because this solution was in effect at the conclusion of hostilities, its importance has been greatly exaggerated and insufficient examination of the problems and solutions of the preceding arrangements has been made.

Using the historical method of investigation, this thesis attempts to reexamine the evolution of the military coordination systems employed throughout the war. The sources relied upon include the extensive literature on the Great War--personal accounts, the official histories, and the diverse interpretations of the intervening years. One source used which has been hitherto unavailable was the private papers and diaries of Field-Marshal Sir Douglas Haig. These penetrating and revealing documents have been held in privileged confidence for more than fifty years by the Field-Marshal's son. Their release allows a more balanced account and interpretation of military cooperation during the war.

The conclusions reached by this study are that the actual operation of the Entente military machinery was haphazard and extremely vulnerable to personal and political pressure. In fact, the personalities of Joffre, Haig, and Petain influenced the actual conduct of operations much more than has been previously suspected. In conjunction with this fact, the growing importance of the British Armies in France during the concluding two years made Haig a primary factor in the final result.

Another conclusion is that the nascent Allied Supreme War Council was a potentially important system which could have been developed to direct the combined military power efficiency. However previous political blunders and the opposition of the field commanders doomed this experiment to a peripheral role.

116. AN ARMY BANK: FIVE STEPS BEYOND JUMPS - ARMY, by Major Raymond S. Allred, Jr., USA, 82 p.

The purpose of this paper was to develop a possible Army banking system with a view toward improving finance service to the Army member and his family. This concept, which has not been tested, does not address other alternative systems and future concepts. The concept was developed by means of library research to reinforce personal on-site experience in automation techniques. The research shows that the civilian banking community has been exploiting many automated banking systems that have military applications. It further shows that the Army has the technical capability of completely automating a full service banking system to accommodate the financial requirements of all Army personnel and to an extent that would greatly surpass what the banking community has accomplished.

117. ALLOCATION OF UNITS WITHIN A TYPICAL FIELD ARMY, by Major Geoffrey E. Blume, USA, 129 p.

The paper presents in detail the organization of a type field army designed for combat in a mid-intensity conflict, Central Europe, in the 1970's.

The methodology used to develop the force is unique to previously published attempts in that combat support and combat service support units were allocated on the basis of quantitative workloads generated by a wargame.

The conclusion reached is that the field army developed by a rational process is much larger--by almost one-third--than that structured without considering the combat environment, intensity of combat, and the resultant workloads to be satisfied.

118. THE CONFEDERATE DEFENSE OF VICKSBURG: A CASE STUDY OF THE PRINCIPLE OF THE OFFENSIVE IN THE DEFENSE, by Major Robert T. Howard, USA, 124 p.

This study concerns an analysis of the Confederate defense of Vicksburg with respect to one of the nine principles of war, the principle of the offensive. The loss of Vicksburg in the American Civil War was a mortal blow to the Confederacy in that it split the south in two and resulted in the opening of the Mississippi River to the Union forces.

During the Campaign for Vicksburg, Major General Ulysses S. Grant, leading a Union army, engaged Lieutenant General John C. Pemberton, commanding a Confederate army, and proceeded to win one of the most brilliant military successes in history. A distinct contrast in aggressiveness appeared to exist between Grant and Pemberton during this campaign. Once Grant landed his army in Confederate territory, he retained the initiative and kept Pemberton at his mercy. Pemberton was unable to overcome the difficulties he experienced and received little help from outside his command. Finally, because of despair among his men, he surrendered Vicksburg to the Union on July 4, 1863 after forty-seven days of miserable siege warfare.

The basic problems in the study were to determine whether General Pemberton, even though completely defeated by Grant, ever applied the principle of the offensive during his defensive operations and to determine why he failed to gain any freedom of action during the Vicksburg Campaign.

Certain "actions" that can be taken by a commander relative to the principle of the offensive in the defense and certain "factors" which may prevent his taking these actions are identified and employed in the analysis.

Among the more important conclusions of the thesis are:

1. The Confederate commander at Vicksburg applied the principle of the offensive against Grant's initial probes into Mississippi and against Federal cavalry raids into the Vicksburg area.

2. The Confederate commander at Vicksburg did not apply the principle of the offensive against Grant's army during the final Union thrust for Vicksburg (May 1 to July 4, 1863). Several of General Pemberton's subordinate commanders, however, did apply the principle during this same period.

3. The primary reasons for Pemberton's failures, with respect to the application of the principle of the offensive, were his lack of intelligence resulting from his lack of cavalry and from interference with his command decisions by higher authority.

119. RETENTION OF FIRST-TERM RESERVE ENLISTMENT PROGRAM PERSONNEL IN THE UNITED STATES ARMY RESERVE, by Major Moss M. Ikeda, USAR, 189 p.

The Army Reserve faces a paradoxical situation wherein it has been declared a major element of General Land Forces under the Total Force concept, and concurrently and ironically, it will lose its principal source of personnel input with the projected termination of the draft by 31 July 1973. The major thesis assumptions were (1) the Army Reserve, under the Total Force concept, will continue its role as the firstline source of military expansion, and (2) the draft will be terminated by 31 July 1973 and the Armed Forces will then become a totally All-Volunteer Armed Force.

A command-level survey of the Army Reserve Commands (ARCOMs) revealed that they unanimously felt retention of first-term Reserve Enlistment Program (REP 63) personnel is a major problem, that they exert a major effort to retain REP 63 personnel, that they need to retain an average of about 18 percent of REP 63 personnel to sustain existing units, and that they are presently retaining only approximately 6 percent.

A troop-level survey questionnaire was designed to determine the extent of the retention problem from the troop viewpoint and to develop recommendations for improving the retention rate of REP 63s. The questionnaire was pretested and then administered to a widely distributed population of REP 63s throughout the Army Reserve. The return of 572 completed questionnaires out of 1,000 mailed more than met Department of the Army's minimum requirement for establishing statistical validity (400 completed questionnaires out of each 1,000 mailed).

Tests were conducted with the hypothesis that the means and standard deviations of rank distribution of the sample and total population were equal. The hypothesis could not be rejected at the .01 significance level. Further, a chi-square test for goodness of fit was then conducted with the hypothesis that the rank distribution of the observed frequencies of the sample did not

differ significantly from the expected frequencies of the total population. That hypothesis could not be rejected at the .01 significance level. Therefore, it was assumed that the sample was representative of the population from which it was drawn.

The troop-level survey findings indicated that 3 percent of first-term REP 63 personnel plan to reenlist. This is only one-half of the actual retention rate the ARCOMs indicated. However, the survey also indicated that 16 percent of those surveyed were uncertain about remaining in the Army Reserve. Should the ARCOMs be successful in reenlisting the group that plans to reenlist plus the total uncertain population, they could retain 19 percent, which would exceed by 1 percent the rate thought necessary to sustain existing units. The importance of encouraging the uncertain population to reenlist cannot be overemphasized.

The troop-level findings showed dramatically that between 67 and 90 percent of first-term REP 63s were draft-induced enlistees. These findings reinforce the projection that the zero draft is expected to have an adverse effect on first-term enlistments in the Army Reserve.

In quantitatively analyzing the data collected in the free-response portion of the troop-level survey, it was clearly shown that emphasis for improving the Army Reserve should be placed on non-monetary matters, with 64 percent ranking improvement in legislation, regulations, and policies; in administration of the program; and in training as the top three priorities, in that order. Six percent desired improvement in civil-military relations. Thirty percent wanted improvement in pay and fringe benefits and in institution of enlistment and reenlistment bonuses. Fringe benefits, with 17 percent, ranked slightly higher than pay, with 13 percent.

Generally, the findings of this study envisage the reservist as a person concerned more about matters that regulate and guide the program than on monetary matters. This corresponds with recent trends and findings in the business world that see a move away from an economically oriented man to a man more concerned about the human aspects of emotional and social needs. Further, the troop-level survey findings indicated that the reservist is seeking more self-direction and that he points to a need for changes in regulative matters, administration, and training to improve his lot. This creates a second paradoxical situation in that the reservist appears to be a man seeking fewer external controls while he is a member of an organization that has been historically regimented and operated under authoritarian leadership.

The ARCOM headquarters viewed matters in need of emphasis somewhat differently from the way REP 63s viewed them. The primary concern of the ARCOMs in improving retention was to improve training, whereas the REP 63s ranked that third. The largest discrepancy occurred where the REP 63s ranked improvement of laws, regulations, and policies first, while the ARCOMs ranked those sixth, or last, as a matter of emphasis. Another discrepancy was that the ARCOMs, by ranking pay second, put much more emphasis on monetary matters to improve retention than did the REP 63s, who placed monetary matters fifth.

The discrepancies mentioned point to a necessity on the part of the ARCOMs to consider the needs and concerns of the REP 63s. The ARCOMs can attempt to better communicate the goals and benefits of the program and/or

can look inward to see if there is a need to reorder the areas of emphasis to meld the progress of the Army Reserve with the type force with which they are working. A set of recommendations to assist in accomplishing the above was developed as a part of this thesis.

120. A COMPARATIVE STUDY OF THE POLITICIZATION OF THE MILITARY IN NORTH AFRICA AND SOUTHEAST ASIA, by Major Harold L. Ladehoff, USA, 159 p.

The purpose of this cross-cultural, comparative study is to develop a mid range theory of the politicization of the military in monarchies and to offer explanations for exceptions to the theory. Three North African societies, Libya, Morocco, and Ethiopia, are examined in depth to determine elements common to the politicization of the military. Two Southeast Asian countries, Thailand and Cambodia, are then analyzed to validate the theory. Appendices are included to give a brief explanation of General Systems Theory (David Easton) and to provide extensive data on the countries examined.

In a world where the most common means of illegally seizing political power is through the coup, the need for such a theory is self-evident. The treatise is both a political science and a military scholastic work since it encompasses the scope of both of the sciences; their inter-relationship promises practical application in both disciplines.

Generally, the military is politicized in four stages. The first stage, that of a relatively apolitical, passive role of the army is a common starting point. In the second stage the army discovers that it has valid claims as an interest group and some capacity politically to achieve its demands--a stage through which the military must pass if it is to be able to overthrow the monarch. The third level of military involvement which follows stage two is both an intensification of the second stage and a fuller recognition of national problems. In the final stage the military can no longer countenance the situation as it exists and takes the political leadership by force or threat of force.

Two parameters which are the best indicators of the current relationship of the monarch with the military are the "legitimacy" of the monarchy and the "problems" the society is encountering. If the monarch sacrifices legitimacy for expediency, or through carelessness cannot reduce real or perceived problems to an acceptable level, a critical point will eventually be reached at which the military leadership will take action.

Rulers who aspire to continue to rule as well as reign must have special qualifications and must practice a policy of depoliticization of the military. The first of these tasks requires the king to have an established record of leadership over a period of time in military affairs. Depoliticization requires the prevention of the formation of meaningful political relationships within the military. Loyalties must be to the throne first and to military leaders second; either many competing organizations within the military must be formed or leadership must be changed frequently. More ideally, the king must be the real military leader as well as the titular one.

The theory establishes the groundwork for its application to other authoritarian societies on a mid-range level and its integration into general systems theory.

121. THE BLACK IN GRAY -- CAN WEST POINT ATTRACT THE BLACK?, by Major John M. Lenti, USA, 87 p.

The United States Military Academy (USMA) has experienced difficulty in attracting qualified black candidates for admission to the Corps of Cadets. It has been only in the past decade that any significant portion of the graduating class has been black. West Point, as many other sources of officer input, has been unable to attract significant numbers of qualified black candidates.

The problem was examined from several perspectives. Of considerable importance is the black's historical relationship to the military establishment. This aspect was examined fully in four phases from pre-Revolutionary War times (1792) to the post-Korean War era (1953). The black and his association with West Point was researched in depth from the entrance of the first black cadet in 1870 through the Class of 1969. A comparative study of black and white attitudes was discussed. The study by the Institutional Research Branch at USMA, was conducted with the entering Class of 1973. An exhaustive examination of the present nomination and appointment procedures served to supplement the historical research as did the case study of a young black, Howard X.

Upon completion of the research, it was determined that more emphasis must be placed on direct and general support programs for USMA. Research indicated that the average black high school senior has very little knowledge of the programs available to him, and, in some cases, feels nothing but hostility toward the military. His attitudes, in part, are shaped by both the historical record and the attitude of his own community. It appears that if the black community were informed of the opportunities offered by USMA, the qualified black student might find such opportunities attractive.

122. A STUDY OF PERSONAL DEFENSE WEAPONS FOR U.S. ARMY HELICOPTER PILOTS, by Major Ray S. Leuty, USA, 76 p.

This study was undertaken in response to a United States Army Combat Developments Command requirement to identify the existing requirements for improved personal defense weapons for the various branches and services of the U.S. Army, to include U.S. Army Aviation. The Colt Model 1911A1 .45 Caliber Automatic Pistol has been the standard personal defense weapon of issue for nearly sixty years. With the advent of the helicopter as a viable combat vehicle, its pilots turned to a variety of personal weapons in a form of protest against the 1911A1's weight and inaccuracy. In 1965 the .38 caliber revolver was adopted as the pilot's weapon of issue. Although more acceptable to the pilot than the 1911A1, it, too, was found to be inadequate.

The problem resolved by the research centered on identifying the existing requirement for a helicopter pilot's personal defense weapon and determining what weapon will best satisfy recognized needs. The sequence followed in the research first determined the need for a pilot's personal defense weapon by identifying the purpose of the personal defense weapon as an emergency use weapon and its intended uses as being for the purpose of defense, survival, and instilling a sense of psychological security.

A determination of the weapon's performance criteria is made by identifying necessary characteristics of a weapon that will provide the capabilities required for intended uses. The necessity for insured access to the weapon requires that it be attached to the body. The factors of size and weight then dictate that the weapon must be a pistol.

A comparative evaluation is made between the revolver and the automatic pistol with the automatic being designated as the more suitable weapon for military use. Four automatic pistols are then selected for a comparative evaluation to determine the weapon best capable of fulfilling the pilot's needs. A discussion and evaluation is made of ammunitions and marksmanship techniques that could improve the weapon's effectiveness and hit probabilities.

Two basic conclusions of the research are that an automatic pistol is the most suitable weapon available for a pilot's personal defense weapon, and that the Colt Model 1971 Military Pistol firing a 9 millimeter cartridge is the presently available automatic pistol most capable of meeting the pilot's needs.

123. A TRAFFIC ENGINEERING PROCEDURE FOR THE FIELD ARMY COMMON USER VOICE COMMUNICATIONS NETWORK, by Major Richard J. Mallion, USA, 241 p.

This thesis is a comprehensive study of tactical voice communications traffic engineering. It proposes an outlined traffic engineering procedure to configure the field army common user voice network as efficiently as requirements and limited assets will allow.

The requirements that might exist for common user service within a large landmass field army are discussed qualitatively. The communications capabilities of the field army and higher and lower echelons are explained, as it is from these assets that the common user network is configured. Although discussion is centered on the field army, the basic procedure is adaptable to any command echelon.

A change in tactical communications doctrine from grid switching to tandem switching prompted the recommendation of a topographic modeling technique which could be applied to predict variations in demand due to simple communications failures or massive battlefield destructions. A "1-3" network is fully developed using a pair of calling assumptions to illustrate the types of predictions that can be made using this modeling technique.

Information on traffic engineering practices which could be adopted for use in the tactical environment has been compiled. Some existing techniques have been modified to make them more acceptable in the mobile and dispersed situation which will be the likely case on the nuclear battlefield or when there is a potential nuclear threat. A new concept for qualitative assessment of service effectiveness is introduced at some length.

Short, nonrepetitive traffic studies are recommended with the emphasis placed on proper interpretation of limited data. This technique is more adaptable to the changing tactical situation than the normal traffic study procedures which collect data over long periods of time and rely on repetitive studies to increase the probability that reconfiguration recommendations will accurately reflect the requirements.

Finally, a proposed comprehensive traffic engineering procedure is outlined. This procedure would be most effective when applied to future automatic switched networks which have accompanying capabilities of automatic data collection, reduction, and interpretation; but provisions are included for nonautomatic traffic studies. The usefulness of qualitative assessments is stressed, and the adoption of modeling techniques to assist in network planning and reconfiguration is recommended.

124. THE TRUMAN-MacARTHUR CONTROVERSY: A STUDY IN POLITICAL-MILITARY RELATIONS, by LTC Allen R. Potter, USA, 213 p.

The purpose of this paper is to determine the political-military relationship between the Truman Administration and General of the Army Douglas MacArthur during the Korean war. Particular attention was directed to those factors resulting in the relief of General MacArthur in April of 1951. The study was conducted through the medium of library research to include a search of the official documents on this subject at the Harry S. Truman Library and the use of a draft manuscript on the subject from the Office of the Chief of Military History, U.S. Army. The results of the study indicate that MacArthur considered that the Administration's "limited war" policy in Korea was appeasement and as a result he did not fully support Administration policies in the conduct of the Korean war. MacArthur's public statements against the Administration's policy in Korea were not only embarrassing to President Truman and his advisors, but were also confusing to their allies as to what the true U.S. foreign policy was in Korea. When General MacArthur refused to heed Administration restrictions in making public statements on U.S. foreign and military policy, he was relieved of all his duties in the Far East by President Truman.

125. CENTRALIZATION OF RESEARCH AND DEVELOPMENT MANAGEMENT WITHIN THE DEPARTMENT OF DEFENSE, by Captain Andrew E. Andrews, USA, 196 p.

The study determines that some form of centalization in research and development management within the Department of Defense will be necessary to increase efficiency in the research and development process. The determination is made by examining a proposed Department of Defense organization for research and development management and comparing it with the current organization. The proposed organization is characterized as being centralized while the current organization is said to reflect the Laird-Packard approach of decentralization.

The hypothesis that a central organization for the management of science and technology will improve research and development efficiency is tested through several sub-hypotheses. These sub-hypotheses assert that the current research and development management organization inhibits innovation and does not include adequate state-of-the-art data in decisionmaking at the top levels of management. Additionally, the statement that the current definitions of research and development need restructuring to include state-of-the-art advancement limitation is tested. Finally, the sub-hypothesis that the proposed organization can correct the above deficiencies in the current organization is tested.

Testing of the hypothesis and sub-hypothesis is done by first defining research, development, and the state-of-the-art. Then concepts for the management of research and development are developed. From these concepts, evaluation guidelines for examining the current and proposed organizations are created. The organizations are then described, evaluated, and compared.

126. TARGET ACQUISITION ON THE TACTICAL NUCLEAR BATTLEFIELD, by Major Joseph H. Brooks, USA, 88 p.

This thesis is an investigation of target acquisition on the tactical nuclear battlefield, with primary emphasis on the processing of target intelligence. The tactical nuclear environment is discussed, and force structures that may be found on the tactical nuclear battlefield are mentioned. Current doctrine for target acquisition is compared with target acquisition principles and shortcomings are identified and discussed. A target acquisition model which may overcome many shortcomings of present doctrine is proposed. It is found that in a tactical nuclear environment, present target acquisition doctrine may not provide commanders with target information in the timely manner required, and that the proposed methodology may overcome many of the shortcomings found in this area.

127. AN ASSESSMENT OF MULTIPLE CONCEPT RETENTION BY COMPARING VARIABLE EMBELLISHED GRAPHICS AND LINE AND BLOCK GRAPHICS IN MILITARY INSTRUCTION, by Major James B. Channon, USA, 3 video cassettes + 65 p.

Military instruction at the middle management level has relied heavily upon visual aids that use a common line and block treatment. This study attempts to discover if a lack of referent power in line and block treatments impedes retention of multiple information concepts presented using such treatments. The key element in this approach appears to be whether or not a graphic treatment that offers a unique referent for each concept presented can assist the memory process more effectively than a graphic treatment that is essentially neutral in its referent value for all of the concepts it attempts to communicate.

A test presenting multiple concepts on black and white television to a sample of management students at the U.S. Army Command and General Staff College produced data which found retention, as measured by recognition, equally well served by line and block graphics as it was using specially designed embellished graphics.

128. THE COMMUNIST SOLDIER IN VIETNAM: A STUDY IN MOTIVATION, by Major George E. Duberstein, USA, 105 p.

During the recent Vietnam conflict the North Vietnamese/Viet Cong soldier faced the most powerful and sophisticated adversary in history. He endured tremendous physical and psychological adversities, and sustained untold casualties; yet, throughout, his leaders were successful in maintaining through him a viable and effective fighting force. A key ingredient in this perseverance was the ability of the communist leadership to develop and sustain high motivation. For many in the United States this ability was an unfathomable mystery which led them to hold the communist soldier in awe. Such a

view affected directly their ability to cope with him effectively. It is the thesis of this paper that communist motivational success in Vietnam was the result of a creative and purposeful application of specific factors and techniques which could be identified and explained. The purpose of this study therefore is to identify and examine the factors which contributed to that motivational success.

The research for this thesis was based primarily upon the experience of the author gained during two Vietnam tours in military intelligence, and upon information developed from a series of government-sponsored studies on the subject. Corroboration and amplification were provided by a number of recent, pertinent intelligence reports, captured documents, and interrogation reports received from Vietnam by the author during preparation of this thesis. Supporting information and background were derived from the writings of various accepted authorities on the area as well as from related books, documents and periodicals.

It is evident from the research that no single element was responsible for the high degree of motivation maintained by the communist forces in Vietnam. Rather, it was the result of a combination of mutually supporting factors and techniques which the communist leadership skillfully exploited. Cultural and historical influences over the years combined to produce a Vietnamese character that was predisposed to accepting certain appeals and conditions. Hundreds of years of foreign domination coupled with the successful Viet Minh experience created an intense spirit of nationalism and a fervent desire to eliminate all foreign influence in Vietnam, themes which the communists convincingly portrayed as their own. A Vietnamese's ingrained respect for authority made him a malleable subject for communist discipline He also had a profound sense of family from which he drew strength and security. By skillfully exploitation of the war-induced isolation from family, the communist military and political cadre were able to substitute as family figures, thereby gaining that allegiance and dependence normally reserved for the family. Efficiently trained, highly motivated, thoroughly indoctrinated, and long experienced in combat, these cadre were the instrument through which Hanoi controlled and manipulated its war effort. Skilled persuaders, they catered to the psychological needs of the men, wedding them to the Party's will, and motivating them to continued sacrifice in its service. Rather than issue and enforce orders, they emphasized persuasion, infinite patience, and bargaining and accommodation, procedures thoroughly in tune with the Vietnamese approach to life, and exceedingly effective in gaining the individual soldier's willing cooperation.

As a further measure of control, both the North Vietnamese Peoples' Army and the Viet Cong Liberation Army were organized into three-man cells which, by their very nature, enhanced the soldier's sense of family. Cellmates were brothers, inseparable in work, combat and death. The mutual admiration, responsibility and surveillance that characterized these cells fostered an intense peer pressure to support the unit's mission. Deviations from accepted behavior were addressed through the "kiem-thao" or criticism/self-criticism sessions conducted at various organizational levels beginning with the cell.

These sessions provided an outlet for the individual to let off steam confess his sins and seek reassurance. They proved an excellent vehicle for indoctrination and psychological manipulation. Constant and pervasive surveillance by cellmates, cadre and Party officials provided a further deterrence against "faulty" thinking.

The top leadership in Hanoi, through its unceasing dedication and exhortation, the cohesive and well-disciplined Communist Party organization which reached to the individual soldier himself, and the cadre system previously mentioned were, in combination, significant factors of positive control and troop motivation.

Additionally, the very nature of the war itself, with its relatively low incidence and intensity, and short duration of actual combat, allowed more than sufficient time for communist respite, reindoctrination and morale building. The indoctrination was constant and repetitive with emphasis placed on the revolution's "just cause," the vulnerability of the enemy the Viet Cong's history of success, and the inevitability of North Vietnamese/Viet Cong victory.

The results of this research, then, indicated that communist motivational success in Vietnam was in fact fathomable, and the factors which created it identifiable. In combination, it was these very factors that created a powerful force for cohesion and continued resistance which sustained the communist soldier in Vietnam under the most trying conditions.

129. CORRELATIVE DYSFUNCTIONAL ATTITUDES OF GUARD PERSONNEL AT THE UNITED STATES DISCIPLINARY BARRACKS: AN EXPLORATORY STUDY, by Major Maynard D. Eaves, USA, 75 p.

Those involved in the administration of the correctional process, whether in the military or in civilian institutions, are increasingly drawn away from traditional concepts and approaches. Contemporary concepts emphasize correction or rehabilitation as opposed to punishment, using a collaborative approach characterized by increased communication between institutional administration, staff, and inmate population.

Relevant literature and research conducted by both military and civilian agencies indicate that:

1. The custodial staff of a corrections facility has a great, heretofore relatively unexploited, potential for constructive rehabilitative effort as well as a too often demonstrated potential for undesirable impact.

2. Certain attitudes on the part of custodial forces are dysfunctional in rehabilitation oriented institutions.

3. High among such attitudinal manifestations in terms of adverse impact are hostility and authoritarianism.

This study focused on the custodial force at the United States Disciplinary Barracks, Fort Leavenworth, Kansas. The purpose was to measure attitudes indicative of three phenomena--guard-prisoner hostility, anomie, and authoritarianism--and to determine if these phenomena were significantly related, to determine if these attitudes changed over time, and to determine if a meausre of anomie or authoritarianism has any predictive value in terms of predicting the possible development of guard hostility toward prisoners and contemporary concepts for their rehabilitation.

Research took the form of an exploratory study using a questionnaire-survey technique. The questionnaire incorporated a scale designed to measure guard-prisoner hostility, the Leo Srole Anomie Scale, and a modified version of the Adorno F Scale of Authoritarianism. Additionally, certain qualitative data were collected via a data sheet. This instrument was administered to a sample of guards at the United States Disciplinary Barracks both before and after a period of employment in that institution.

Anomie is defined as interpersonal alienation and social malintegration. Authoritarianism, as measured by the Adorno scale, is defined as anti-democratic potential. Guard-prisoner hostility is defined as hostility on the part of the guard personnel that is specifically focused at prisoners and contemporary concepts for rehabilitation.

Four hypotheses were tested. They were:

1. Anomie in guard personnel is associated with guard-prisoner hostility.

2. Authoritarian personality traits are associated with such hostility.

3. Guard-prisoner hostility will increase with time employed in the confinement atmosphere, while anomie and authoritarianism prior to employment will remain constant.

4. Guards who were high in anomie and authoritarianism prior to employment in the confinement atmosphere will tend to become highly hostile, while guards low in these attributes prior to employment will tend to be and remain less hostile.

One of the four hypotheses was accepted. The following are findings of significance. First, anomie was not consistently associated with guard-prisoner hostility. Second, authoritarian personality traits were consistently associated with such hostility to a significant degree. Third, anomie for the total sample decreased over time, while authoritarianism and hostility did not change significantly. Fourth, some individuals within the sample did change significantly in hostility, some increased and some decreased. Fifth, the variables hostility and authoritarianism tended to vary concomitantly over time.

130. INDUCED STRESS, ARTIFICIAL ENVIRONMENT, SIMULATED TACTICAL OPERATIONS CENTER MODEL, by Major Don E. Gordon, USA, 169 p.

This study investigates the feasibility of designing, constructing, and operating a conceptual model of a tactical operations center simulator. The model is intended to simulate performance tasks identified for Army Security Agency company level officers during combat operations. The model has been operational at the United States Army Security Agency Training Center and School, Fort Devens, Massachusetts, since 1970 and continues to serve as an alternative to other more costly methods of combat simulation.

The model's subsystems include an electro-optic simulation of tactical level communications and electronic warfare techniques. High resolution aerial photography is simulated by closed circuit television suspended above a terrain board. Stress is induced by information overload, accelerated and compounded decision making, peer group pressure, and battle drills. An artificial environment is effected by performance testing and role playing in conjunction with an HO scale (¼": 1') model war game exercise. The model may be used with computer assisted performance testing.

The study describes the use of the model as an instructional device performance testing device, and as a substitute for a brigade level command post exercise. Application of the model to civilian education and other training agencies is discussed. Technical data reporting on the method employed to simulate radio wave propagation by visible light waves are provided in detail.

131. ROLE OF THE FIELD ARTILLERY IN THE BATTLE OF KASSERINE PASS, by Major David H. Hazen, USA, 223 p.

"What is past is prologue" reads the inscription carved in stone at the entrance of the National Archives in Washington. While few will dispute the value of history in general terms, it may not be as widely recognized how heavily the practitioner of military tactics and techniques is dependent on it. Only through the study of past battles can the fundamental principles which form an army's doctrine be derived. Even development of a superior doctrine is only the first contribution of historical study. The practitioner who is proficient in doctrine must be able to apply its principles in the infinite variety of tactical situations he might face. Often a knowledge of history guides a commander in this application, but, more importantly and perhaps somewhat paradoxically, history teaches the necessity for changes, due to technological advances in the tools of war, from a doctrine previously thought to be superior. Thus a professional soldier must not only be knowledgeable of doctrine and proficient in its application; he should also know from historical example how and why the doctrine tenets he practices have evolved. This is particularly important in the initial phases of military operations when new weapons, tactics, and techniques, as well as probable inexperience, inadequate training, and inefficient organization, often dictate immediate adjustments on the battlefield.

These considerations, plus the fact that Americans first experienced defeat, then halted and turned back the enemy, and ultimately won the campaign, make the Battle of Kasserine Pass an excellent vehicle for study. Additionally, since it was there that the first employment of a type U.S. Corps in World War II occurred, the battle is particularly well suited for analysis of the artillery role. This thesis focuses on employment of field artillery during the several engagements that comprised the Battle of Kasserine Pass with the objective of providing insight into factors which influence artillery doctrine.

Among the more important conclusions of this research are, first, although not uniformly observed or properly applied, for the most part U.S. Army doctrine for employment of field artillery was adequate. Second, the greatest doctrinal deficiencies stemmed generally from a lack of accurate American military perception of the real nature of mobile warfare. This was most apparent in the early employment of armored and motorized forces and their accompanying artillery. Third, a great failing on the part of American commanders, which must be explained partly on the basis of weakness in doctrine, was lack of appreciation for the proper role and capabilities of field artillery and hence failure to employ sufficient artillery assets. Fourth, the most serious deviation from accepted principle which contributed to defeat was failure to maintain maximum feasible centralized control of artillery assets. The unfortunate result was an inability to mass sufficient and accurate fire at the decisive point. Fifth, artillery material was generally inadequate, as were many weapons of the other arms. The shock of Kasserine and lessons learned, however, served as catalysts for rushing to the field a variety of new weapons then under development. Sixth, field artillery organizations above division level were rigid, were unwieldy, and lacked flexibility. Finally, and encompassing all of the above, weaknesses in doctrine, particularly that governing the relationship of fire to maneuver, are inevitable. Optimum relationship is highly dependent on the nature of a conflict and, therefore, is subject to innumerable and rapidly changing variables.

132. THE MERCENARY IN HISTORY, by Major Theodore G. Kershaw, USA, 102 p.

The purpose is to determine the essence and role of mercenaries in the western European tradition. The method is analysis and comparison, using an extended concept based on the definition of mercenary, of five historical periods: the ancient period from 600 BC to 400 AD includes Greece, Rome and Carthage; the medieval period until 1300; Renaissance Italy; the early modern period from 1500 until 1800 and the modern period until the early 20th century. Mercenaries abounded in Greece and Carthage but not under Rome. The early middle ages had few but the practice of employing mercenaries grew in England and France from about 1000 AD and flourished in Italy, France, and Germany until the French Revolution. Conscript and professional armies replaced mercenaries armies. A peculiarity of the professional French Army was that it felt itself to be mercenary in the 18th century. The essence of mercenaires appears to be that they fight in isolation from their homeland and society in general, seeking political, social and economic status through war. Condottieri were usually successful. The role of mercenaries grew out

of their greater military proficiency and utility as compared to the feudal array. In the mid 17th century governments appropriated the functions of the condottieri. After the French Revolution, conscript armies, capitalizing on national energies, replaced mercenaries. Mercenaries of the 19th and 20th centuries are vestigial.

133. A STUDY OF THE ARMY'S ADVANCED CIVILIAN EDUCATION PROGRAMS, by Major Joseph S. King, USA, 122 p.

There is a paradox in the Army's position in graduate education. At this time there is a limited need for officers with graduate degrees, particularly when considering only actual duty assignments. Ideally, those officers chosen for advanced civilian schooling would serve a number of tours of duty in those positions calling for direct utilization of the graduate education, essentially becoming specialists. However, because of the traditional disfavor of specialization in career development, most officers desire to serve only the necessary tour of duty in the specialized area.

In spite of the reluctance to make full use of the education directly, however, most officers desire and seek opportunities to obtain a graduate degree. This is due to the general opinion held by a majority of officers that the advanced degree is of great importance to their own individual advancement. Surveys and studies generally point out that few officers believe that they would be of significantly more value to the Army after obtaining a graduate degree, but they believe the degree will be a means of enhancing their promotion chances and of assignment to key positions.

As a result, there is great concern among most officers over the attainment of a graduate degree but little idea that the advanced education will be of direct benefit to the Army. Consequently, there is a need to bring the programs of the Army in the field of advanced civilian education into focus.

This thesis reviews the Army's advanced civilian schooling programs to determine the weaknesses of the programs and areas where improvements can be made. It is determined that the primary deficiencies of the programs fall in the areas of identification of actual Army requirements, utilization of officers trained in civilian graduate schools, and avoiding the undesirable career development implications of "ticket-punching" and "split professional interest."

The deficiencies of the advanced civilian schooling programs stem primarily from the lack of a clearly understood purpose of the programs. This is seen by a number of review boards and reinforced by a survey taken of the Command and General Staff College class of 1972-73. It is concluded that a definite statement concerning the purpose of all advanced civilian school programs is one of the primary requirements for improving the programs and making them of greater value to the Army.

Additionally, the goal of the advanced civilian degree programs has not been clearly determined. It is the conclusion of this thesis that the goal should be the most realistic and achievable possible and that total requirements should be in consonance with the goal. At this time it appears that a goal of 20 percent of all career officers having graduate degrees is the most acceptable.

The adverse career development implications of the advanced civilian schooling programs present the greatest challenge, for it is necessary to encourage continued education for all officers while at the same time reducing the "ticket-punching" aspects. This calls for a professional attitude on the part of all officers, from the most senior to the most junior, and controls on the advanced civilian schooling program which will insure that the Army receives full value for money and manpower spent.

134. VARIABLES AFFECTING THE INTEGRATION OF PUBLIC AFFAIRS IN DEFENSE DEPARTMENT POLICYMAKING, by Major Fredric H. Leigh, USA, 195 p.

This thesis seeks to determine the proper role of public affairs and the variables which affect its participation in DOD policymaking.

The research is descriptive. A search of the literature reveals that participation in policymaking is a proper function of public affairs, although the status and place of the function varies. Interviews of DOD public affairs personnel in December 1972 reveals that the variables are: the key decisionmakers; the organizational environment; and the practitioner. These variables are explained using "administrative man" and organization theories.

A central conclusion is that public affairs participation in policymaking is a function of the decisionmakers' experiences, learning and past behavior in interaction with the organization environment and the practitioner, which are also interacting; each of the latter variables have their own perceptual sets which influence their interaction.

135. A FEASIBILITY STUDY OF A NON-CATAPULT EQUIPPED EXPEDITIONARY AIRFIELD, by Major Robert L. Pappas, USMC, 108 p.

The purpose of this paper is to examine the feasibility of conducting operation by Marine Corps tactical fixed-wing aircraft from a non-catapult equipped expeditionary airfield having limited dimensions. Certain logistical constraints are applied to maintain a realistic balance between existing systems and the one proposed in this paper. The investigation was conducted through research of technical documents and personal interviews with experts in the field. The research shows that it is feasible to conduct aircraft operations as hypothesized, within the logistical constraints imposed, and at the same time experience a gain in overal operational capability.

136. THE ROLE OF THE PEOPLE'S REPUBLIC OF CHINA IN THE EAST BENGAL CRISIS OF 1971, by Major Thomas C. Roberts, III, USA, 154 p.

In April, 1971, the People's Republic of China (PRC) opted for support of the military regime in West Pakistan, rather than for backing the struggle for national liberation then being waged by the Bengali revolutionaries in East Pakistan. To many observers, this appeared to be a contradiction of China's oft-professed support for "wars of national liberation".

The purpose of this study is to examine China's actions with regard to the crisis on the subcontinent from April to December, 1971, in an effort to determine whether these actions did, in fact, constitute a contradiction. In order to place in perspective China's foreign policy decisions during this period, the past nature of Sino-Pakistan and Sino-Indian relations is examined. The effects of the continuing Sino-Indian border dispute, the growth of Soviet influence in India, and the Maoist revolutionary movement in northeast India on China's perception of India in 1971 are discussed in some detail. Peking's support for wars of national liberation since 1949 is examined in the context of China's overall foreign policy in order to determine how this tactic has been employed by the PRC in pursuit of its foreign policy goals in the past, and the relative importance which Peking attached to such support in 1971.

In analyzing China's response to the crisis on the subcontinent, an attempt is made to determine those options which Peking most likely considered as being open to her, as well as the factors which she probably perceived as constituting constraints on her freedom of action. This analysis reveals that two decisions were faced by Peking; the first, in April, 1971, was whether or not to support Bangla Desh, and the second, in December, was how to fulfill its obligation to Pakistan without provoking a Soviet military response or jeopardizing the gains achieved up to that point by the "revolutionary diplomacy" which it had pursued since the end of the Cultural Revolution.

Peking's entry into the United Nations in October is seen as enabling the PRC to use political action as surrogate for more substantial material or military assistance to Pakistan, while, at the same time, permitting China to minimize whatever ideological "losses" it might have incurred in forsaking the "people's war" in East Bengal by providing a forum in which it could attack Indian "imperialism" and Soviet "social-imperialism".

The major conclusion reached in this paper is that seldom, if ever, is either the ideological or national-interest "component" of Chinese foreign policy present by itself. Nor can either component easily be "factored out" of any particular Chinese foreign policy decision and analyzed independently of the other. In the case of the East Bengal crisis, China's decision not to support the Bengali rebels did not constitute a contradiction, for considerations of national-interest surpassed those of ideology at this juncture in Peking's foreign relations. Nevertheless, the ideological component was present and can be seen in the PRC's efforts to advance its own interests in the Third World vis-a-vis both India and the Soviet Union by assuming the role of the champion of a weaker nation against "aggression" and "imperialism".

137. THE CONCEPT OF LEADERSHIP PROGRAMMED, by Major Sherman H. Williford, USA, 190 p.

The purpose of this thesis is to determine if there is duplication of certain leadership instruction presented to Infantry Officer Basic Course students and if programmed instruction could be used as a brush-up or review for those students entering the Infantry Officer Basic Course in lieu of some formal platform instruction, thus saving instructional time and reducing or eliminating duplication of instruction.

Following this line of reasoning, the first task was to define the concepts of leadership as taught by the Leadership and Command Committee, U.S. Army Infantry School, and Reserve Officer Training Corps unit. Investigation revealed that both institutions' definition of the concept of leadership was the same.

The next task was to analyze the concept of leadership instruction presented to Reserve Officer Training Corps cadets and to Infantry Officer Basic Course students at the U.S. Army Infantry School to determine if an overlap existed.

The final tasks were to determine if a self-instructional programmed lesson could be written as a review of the basic concept of leadership for Infantry Officer Basic Course students, most of whom are Reserve Officer Training Corps graduates, and then to write the self-instructional programmed unit.

138. MILITARY INTERCHANGE POTENTIALS FOR THE UNITED STATES IN EAST EUROPE: PROTOTYPES FROM THE YUGOSLAV EXPERIENCE, by Major Peter R. Bankson, USA, 207 p.

The military services of the United States provide the Administration with trained, deployed, available resources to support U.S. foreign policy in peacetime. These resources vary in the type of product involved, the military function addressed and the source of funds to support the operation.

This study develops a three dimensional matrix as a conceptual framework for reviewing the variety of these activities, which are referred to as "military interchange." The matrix is then used to examine the history of U.S. relations with the Socialist Federal Republic of Yugoslavia, since early 1946.

Following this review, use of the matrix as a planning tool is demonstrated, to identify possible potential for military interchange between the U.S. and other East European nations.

From the study it is concluded that:

1. The matrix is an effective device for reviewing military interchange.

2. The matrix shows promise as an aid for strategic planners in identifying potential future interchange tasks for the U.S. military.

3. Military interchange has been a regular element in U.S.-Yugoslav relations since World War II. The types of interchange used have varied, but some use of this means of supporting U.S. policy has been available to U.S. policy makers under nearly every set of international political conditions.

139. THE EFFECT OF DUPLEX AMMUNITION ON SMALL UNIT FIREPOWER, by Major Lyman C. Duryea, Jr., USA, 195 p.

This thesis explains the salvo concept beginning with its first application by primitive man to its present application in modern small arms.

Studies by Johns Hopkins University, completed in 1959, led to the conclusion that the salvo concept, in a number of applications, demonstrated potential for military use. This thesis examines one of those applications, the duplex cartridge, which employs two bullets in a single cartridge case, both launched with a single aiming action and trigger pull.

Extensive testing and evaluation conducted by the United States Army Infantry Board, the United States Army Ballistics Research Laboratories, the Marine Corps Landing Force Developments Center, and other agencies has resulted in the compilation of large amounts of data representing many different types of tactical applications. As a result of U.S. Army testing and evaluation, the Cartridge, 7.62-mm, NATO, Duplex, M198, was type classified in 1964.

Limited amounts of duplex ammunition were employed by American forces in Vietnam; however, no formal reports on its effectiveness were compiled. With the changeover from the M14 Rifle and the M14A1 Automatic Rifle to the M16A1 Rifle, the interest in the 7.62-mm duplex cartridge waned, despite its demonstrated superior performance with respect to the standard 7.62-mm M80 ball cartridge. With the retention of the M60 Machine Gun as the standard platoon automatic weapon, the number of small arms cartridges in the inventory was almost doubled. This proliferation led to a recommendation in 1973 that while the concept of duplex ammunition is valid, there is no requirement for a 7.62-mm duplex cartridge at this time.

This thesis applies the accumulated data to an effectiveness model. The model devised for this purpose considers the potential lethality of each of several cartridges at various ranges for different types of tactical situations, the ability of a firer to hit targets with different weapon-ammunition combinations in each of these tactical situations, and the relative probability of engaging enemy soldiers in each of the tactical situations.

An evaluation of the information derived from the model leads to the conclusion that the M198 Duplex Cartridge, when employed with the M14 Rifle, the M14A1 Automatic Rifle, and the M60 Machine Gun will significantly increase the effectiveness of these weapons, resulting in increased enemy casualties on the battlefield. Additionally, the thesis concludes that a 7.62-mm tracer cartridge, ballistically matched with the duplex cartridge, will result in further increases in effectiveness.

The thesis recommends that a cost effectiveness study be conducted to determine if duplex ammunition should be produced and stockpiled for employment with the M60 Machine Gun. Additional research needs to be conducted to determine or confirm present data regarding those ranges at which the enemy is engaged by small arms in combat, and their relative occurrence. Finally, it must be determined if potential bullet lethality is meaningful at ranges beyond those within which the large majority of enemy are engaged by small arms, or whether suppression at greater ranges is more properly a function of supporting direct and indirect fire weapons.

140. LONG RANGE TASKING OF CONTROLLED HUMAN INTELLIGENCE IN SUPPORT OF FOREIGN POLICY OBJECTIVES, by Major Richard B. Fisher, USA, 189 p.

This thesis attempts to prove the hypothesis that a threat/opportunity matrix methodology can be used to effectively define targets against which an effort to satisfy long-range informational requirements may be attempted by the use of controlled human intelligence techniques.

Nothing as well defined as a target was found, but a more generalized concept was, and shows promise of further rationalizing the management of intelligence collection. In addition, the threat/opportunity matrix was exhaustively exercised, using the Nixon foreign policy in future Russian and Indian environments, and may prove a useful tool of policy analysis after further development.

141. A PROPOSAL FOR A MULTIMODE JOINT AIRSPACE CONTROL DOCTRINE, by Major Donald W. Johnson, USMC, 73 p.

In 1965, the Joint Chiefs of Staff tasked the Air Force, in coordination with the other Services, to develop a joint airspace control doctrine. The Services subsequently could not agree on the contents of draft manuals prepared by the Air Force. This study analyzed the issues which prevented Service agreement, reviewed the recommendations of other researchers, and then proposed and tested a conceptual solution to the inter-Service problem. The study noted that the Air Force tried to combine command relationships, general principles for airspace control, and specific procedures into one manual, which gave each of the other Services the opportunity to take exception to a specific tactical or command situation as a basis for rejection. The author proposed a solution based on the premise: different tactical situations require different procedures for airspace control; therefore, a joint airspace control doctrinal manual should recognize identifiable groupings of procedures, or modes, of airspace control. A concept of nine airspace control modes was presented to selected officers from the U.S. Army Command and General Staff College and the Combined Arms Combat Developments Activity at Fort Leavenworth, Kansas. The nine modes, as presented, were not determined to be acceptable for joint doctrine; however, 35 of the 48 officers who participated in the test indicated that three or more modes of operation should be used for joint airspace control.

142. TACTICS AND TECHNIQUES FOR THE EMPLOYMENT OF THE CANNON LAUNCHED GUIDED PROJECTILE WITHIN THE FIELD ARTILLERY, by Major William K. Malone, USA, 78 p.

Viable tactics and techniques for the employment of newly developed equipment often are devised in haste and with minimal coordination as the basic materiel nears type classification. The cannon launched guided projectile is no exception as development of the projectile and its required ancilliary equipment continues without parallel consideration of its ultimate integration into the field artillery system. This thesis examines the requirements generated by introduction of a guided munition into the Army field artillery. It identifies problems peculiar to each functional element of the field artillery system and presents tactics and techniques for consideration by the field artillery community in the assimilation of cannon launched guided projectiles.

The overall conclusion reached is that the current field artillery system cannot effectively employ the cannon launched guided projectile without certain adjustments within most of the field artillery system functional elements. The primary emphasis must be placed upon consideration of forward observer team organization, equipment, and employment tactics.

143. THE IMPACT OF BALANCE OF PAYMENT CONSIDERATIONS UPON LOGISTICAL SUPPORT OF U.S. ARMED FORCES 1960-1974, by Major Joseph R. McElroy, USA, 104 p.

During 1960, the Eisenhower Administration determined that the consistent deficit position of the United States balance of payment account threatened the strength of our currency and the stability of the international and domestic sectors of the economy. Since Department of Defense overseas expenditures contributed to the deficit, actions were initiated to reduce offshore military spending. Since 1960, a structure of policies and procedures have been established to minimize overseas expenditures. For example, with some exceptions, overseas commands have been directed to return procurement requirements to United States purchasing activities even if higher costs are incurred.

The purpose of this study is to reconstruct the impact of balance of payment considerations upon our logistical posture in Western Europe, 1960-1974, and to identify any changes that may be dictated to related Department of Defense policies and procedures. The findings of the study indicate that the redirection of procurements to stateside purchasing activities has substantially added to budgetary costs and has impaired supply responsiveness. Moreover, rapid growth within the commercial sector of the United States balance of payment account has appreciably reduced the significance of military overseas expenditures. These considerations have caused the author to hypothesize that the return of procurements to stateside purchasing activities is no longer justified if the domestic price exceeds the cost from foreign sources. Rather, procurements should be made where the dual requirements of cost effectiveness and supply responsiveness are best satisfied.

The study analyzes data and information obtained from the Congressional Record, the Office of the Secretary of Defense (Comptroller), the Army and Air Force European Commands, as well as reports and studies of independent agencies. Research indicates that the impact of balance of payments considerations upon our European military forces occurred in three general phases. From 1960-1963, a series of "quick-fix" actions were taken to achieve prompt and measurable reductions in overseas spending. The period 1964-1970 was characterized by procedural refinements and emphasis upon sharing the balance of payment burden with our European Allies. Since 1971, there has been an evolution of concepts for achieving more direct supply support from the United States.

The findings of the study indicate that balance of payment considerations have increased joint financing of the NATO infrastructure, prompted common usage of facilities with our Allies, and contributed to the establishment of cooperative logistical systems. Modular construction, deferred maintenance programs, and increased procurements from American overseas distributors are other reflections of the balance of payment impact. Although not the only factor, the development of strategic redeployment capabilities has also been given impetus due to balance of payment considerations.

144. MILITARY ASSISTANCE: SOME UNIFORMITIES AMONG DONOR RECIPIENT RELATIONSHIPS, by Major William H. Mott, USA, 478 p.

The problem is to deduce and verify a set of uniformities within the donor-recipent relationship that are related to successful military assistance. The analytical approach is used to determine coincidence of components of that relationship and achievement of donor aims. Uniformities are deduced by detailed analysis of seven case studies, and verified by cursory analysis of nineteen randomly selected contemporary cases. Uniformities that are contributive to success are:

1. Coincidence of donor and recipient aims

2. Donor control of resources and influence over recipient.

3. Donor commitment or deployment of troops to ensure success.

4. Donor integration of policy, strategy and military assistance.

145. COMBINED ARMS MODEL-CONCEPT FOR DEVELOPMENT, by Major Joseph F. Paone, USA, 257 p.

The problem undertaken in this thesis is to determine whether or not it is feasible to develop a battalion level stochastic simulation of combined arms operations.

Initially a methodology for application of such a model in support of type studies in the area of tactics, doctrine, organization and material was developed. From this point of potential application, a set of characteristics of the model to enable this application was developed. Chapter II describes the combined arms battalion level system and establishes measures of effectiveness to both evaluate any model considered or developed and for future use in applying the model in support of a specific study objective.

All models known to exist which have potencial for application in studies of the nature described are reviewed in detail in Chapter III. The strengths and weaknesses of each model considered are listed for future use. The results of this review is the conclusion that no model currently exists which satisfies the requirement for a combined arms battalion level simulation. Several programs do exist however, which successfully model portions of the system.

146. CONVERSION OF THE DEFENSE COMMUNICATIONS SYSTEM FROM ANALOG TO DIGITAL FORM, by Captain Richard A. Stanley, USA, 199 p.

Given that the Defense Communications System (DCS) plans to convert from analog to digital transmission, the paper examines that decision in an attempt to determine major problem areas and topics worthy of further study. The DCS history, organization, and structure are examined, and modulation theory and techniques are reviewed. Current development in advanced communications technology is examined, and the implications of these developments on the DCS conversion are examined and evaluated. Anticipated major problem areas are deduced, and areas that require further investigation are enumerated.

147. AN EVALUATION OF REMOTELY PILOTED VEHICLES IN THE ANTIARMOR ROLE, by Major Donald R. Street, USA, 73 p.

There exists a need in the United States Army for a weapons system that is capable of engaging armored vehicles at ranges far exceeding the range of the main armament of the tank. This need is currently being filled by the TV guided bomb and the helicopter mounted TOW missile. However, both of these systems suffer from the drawbacks of high cost and high vulnerability to antiaircraft artillery and missiles. The Remotely Piloted Vehicle (RPV) is a new weapons concept that is examined and compared with the two existing systems. The RPV is found to be far less expensive and much less vulnerable to antiaircraft fire but suffers some possible problems in an electronic countermeasures environment. Some possible solutions to this ECM problem are offered which promise to make the RPV a superior antitank weapon when used as a laser designator for a terminally guided, laser homing weapon.

148. REQUIREMENTS AND CAPABILITIES OF THE LAND FORCE COMMANDER FOR TIMELY INTELLIGENCE IN A HOSTILE AIR DEFENSE ENVIRONMENT, by Major James R. Thomas, 86 p.

This thesis examines the requirements of the land force commander for timely intelligence of the battlefield when engaged in combat operations with a highly mobile enemy. The capabilities of the organic Army agencies and USAF Tactical Reconnaissance forces are addressed in light of a typical enemy maneuver and air defense environment. The thesis is UNCLASSIFIED. Theoretical capabilities of the enemy, extracted from Field Manuals 102 and 103, pertain to the Aggressor, the Maneuver Enemy, whose characteristics are used by the U.S. Army in training exercises. Characteristics of all the systems available to the land force commander were extracted from unclassified Field Manuals, pamphlets, and recently declassified test reports.

General conclusions reveal that:

1. The commander will not be capable of acquiring timely order of battle and target acquisition intelligence throughout most of his areas of interest and influence.

2. Intelligence derived through existing Tactical Reconnaissance equipment and procedures will not be sufficiently timely to meet the requirements of a typical tactical situation.

3. Certain developmental USAF capabilities for timely surveillance/reconnaissance could be sufficient to collect and process tactical information, and the US Army Battlefield Information Control Center could be sufficient to produce timely intelligence from this information--provided the two systems were integrated.

149. SOVIET AIRBORNE DOCTRINE, by Captain Frederick E. Van Horn, USA, 128 p.

The purpose of this paper is to survey available information on Soviet airborne forces and present a description of Soviet airborne history and missions. The survey, conducted by means of library research, indicates that the Soviets intend to use their airborne forces for offensive operations in the tactical, operational, and strategic rear of their enemy during nuclear and conventional wars. They will use these forces to add depth to the battle, to exploit nuclear attacks and to accomplish a variety of strategic, operational, and tactical missions.

150. AN ANALYSIS OF PRESENT AND DEVELOPING AIRSPACE MANAGEMENT SYSTEMS FOR COMMUNICATION, LOCATION, AND IDENTIFICATION IN THE 1980-1985 TIMEFRAME, by Major William E. Wahl, USA, 155 p.

This study examined three subsystems of a total airspace management system. These were communication, identification and location. Assumptions were made that multi-service aviation would be used in forward areas in mid- to high-intensity conflicts of the future and that air parity and extensive electronic warfare were likely. Present procedures, equipment, and developing systems were then evaluated against the forecast environment. Major shortcomings were found in the capacity of air to ground communications, the reliability and reaction time of identification systems, and the coverage and availability of location systems. All three areas were also found deficient against a major electronic warfare threat. The system found most suitable was AWACS, the Airborne Warning and Control System being developed by the Air Force. No system was found that fully met the expected combat demands of the 1980-85 time period.

151. THE COMMAND SUPPORT CIVIL AFFAIRS DETACHMENT - A CONCEPT FOR TOMORROW, by Major Lester D. Walkley, USA, 63 p.

This study was undertaken to propose organizational structure for a divisional command support civil affairs unit. The reason for this effort comes from the author's perception that current and proposed command support civil affairs units are overspecialized in functional representation and employ excessive manpower.

The methodology employed was to research civil affairs activities in support of United States Army combat operations during World War II, Korea, Lebanon, the Dominican Republic, and Vietnam. This historical research provided basic data on recurring civil affairs activities in support of combat forces in general war, limited war, show of force operations, and an insurgency. From this research, generalizations as to organizational structure, size, and personnel qualifications were correlated to current civil affairs concepts and doctrine to provide the proposed structure.

The historical research provided conclusions that command support civil affairs activities are general and reactive in nature. Civil affairs personnel performed duties of a general nature that were required to support the combat mission and insure the commander's legal and moral obligations to the civil populace were discharged. These duties included the reestablishment

of civil control, humanitarian aid to refugees, and the provision of labor to the military force. Operations in countries with functioning governments entailed coordination with indigenous, national, and international agencies. The Vietnam experience added the conduct of the supported unit's civic action program to the civil affairs tasks.

Civil affairs support to combat divisions varied from the organic G5/S5 staff section to the attachment of four civil affairs platoons, consisting of a total of twenty personnel. In some cases divisions received civil affairs support from civil affairs area support units located in the vicinity of the divisions operational area. With the exception of the labor functional team dispatched to the Dominican Republic and the later addition of United States Army Reserve specialists activated for that action, no functional team representation was identified in division command support operations.

Therefore, the proposed command support civil affairs detachment model was organized employing officer personnel with the military occupational specialty of Civil Affairs Officer (8105), and non-commissioned officer and enlisted personnel possessing clerical specialties. This organization realizes major manpower savings over the current active duty organization and the proposed Civil Military Operations Study organization. The proposed organization incorporates none of the functional specialties common to area support units. When functional specialists are required for command support operations, in the context of the Dominican Republic experience or during certain types of stability operations, they should be drawn from the active army manpower pool or activated from United States Army Reserve Units.

Adoption of the proposed civil affairs command support detachment would provide a civil affairs detachment to all army divisions within current civil affairs personnel authorizations. This action would place civil affairs personnel at the operating level which would enhance the readiness capability of the division, while integrating civil affairs participation in contingency planning, and upgrading civil affairs training and area orientation. Additionally, the civil affairs detachment would provide centralized management for the division's civic or domestic action program.

152. JOHN BELL HOOD: A BID FOR FAME, by LTC Daniel C. Warren, USA, 122 p.

John Bell Hood was appointed to the United States Military Academy from Kentucky and graduated 44th in a class of 52 in July 1853. The next eight years were spent in infantry duties in California and cavalry service in Texas. With the outbreak of the Civil War Hood resigned his commission and entered the Confederate Army as a resident of Texas.

Originally appointed a first lieutenant he served on the Virginia peninsula in 1861 and received rapid promotion to major from Brigadier General John Magruder. By September 30, 1861, he was the Colonel of the Fourth Texas Regiment under Brigadier Louis T. Wigfall. When the latter resigned, Hood, who was engaged to Wigfall's daughter, was promoted in March 1862 to brigade command, over more experienced officers.

During the Peninsular Campaign, Hood actively sought opportunities for combat and established a reputation as an offensively-minded, daring combat leader. He received favorable mentions in official reports, especially at Gaines' Mill, though taking heavy casualties. At Second Manassas, it became necessary for the Corps commander, Longstreet, to caution him against over-rapid advancement. His first clash with a fellow officer (Evans) also occurred at this time, resulting in Hood's arrest. He was released by General Robert E. Lee just prior to Antietam, and the matter dropped. As the result of his efforts he was promoted to major general.

He received a wound in the left arm at Gettysburg after protesting the orders which he received to advance on Little Round Top. Upon recovery he went west with Longstreet, but lost his right leg from a wound at Chickamauga. During his convalescence, he was introduced to Richmond society, and became well acquainted with Jefferson Davis, an enemy of Wigfall. He broke his engagement to Louise Wigfall, and transferred his affections to socialite Sally Preston.

Despite his incapacitating wounds, which necessitated his being strapped to a horse in order to ride, Hood was promoted to lieutenant general and sent as a Corps commander to the Army of Tennessee, apparently with a prior understanding with President Davis by which Hood would urge Johnston to the offensive.

During his service under Johnston, Hood systematically undermined the latter's already tenuous relationship with Richmond. He was named a full general and replaced Johnston as commander of the Army of Tennessee July 18, 1864.

Assessment of his subsequent performance as a commander is buried in a mountain of postwar charges and recriminations. Sustaining a series of defeats, he constantly fought with his subordinate commanders and disparaged his troops. In late 1864 he invaded Tennessee, an operation which culminated in the total destruction of his army at Nashville in December 1864. He was subsequently relieved of command at his own request.

Hood's career is characterized by ambition, bravery, and the use of influential friends to gain positions of high responsibility. While his tactical conceptions were sound, they failed at higher levels of command because of his inability to work with subordinates. On various occasions he circumvented or ignored his own superiors. His style of command was modeled after that of Lee but was unsuitable to the Army of Tennessee, and he demonstrated a lack of managerial and logistical understanding. These factors, with his early successes which carried him to a level beyond his ability, account for his defeat with the Army of Tennessee.

153. A PERCEPTUAL EVALUATION OF THE CONUS INSTALLATION MAINTENANCE SUPPORT STRUCTURE BY APPLICATION OF THE CONTINGENCY THEORY OF MANAGEMENT - AN EXPLORATORY STUDY, by LTC Luther J. Griffith, USA, 106 p.

Military tradition and Army regulations have established decentralization as the basic concept for organization design for the Army down to the lowest practicable organizational level. However, contemporary views of organization design are drawing away from the universal "one best way" to "using what works" in recognition of an appropriate match between specific concepts and variables of the situation. In support of this trend, CONUS installation maintenance organization planners are beginning to explore the use of consolidation and centralization as a positive means of gaining a more efficient and effective organization for maintenance.

Relevant management and organization literature and military documents indicate that:

1. There is a modern view of organization design that management concepts are not universally applicable. Different situations call for different concepts and the utilization of a concept is contingent on the situation.

2. The prescribed organization for CONUS installations is based on the traditional concept of decentralization. The regulations assert that garrison administrative and logistics functions may most effectively be accomplished by utilizing decentralized organization.

3. The consolidation in 1963 of the direct support and general support categories of maintenance into a single TDA installation support maintenance activity was a break with the tradition and custom of decentralization. Since that time consolidation and centralization have been mildly supported in Army literature as an approach to a more efficient and effective organization design for CONUS installation maintenance support.

4. Current testing of the concept at Fort Ord and Fort Gordon indicate that further consolidation and centralization of CONUS installation maintenance support functions may be justified.

This study focused on the problem of determining the organizational concept for maintenance support most applicable to the CONUS installation environment. For this study, decentralization was defined as a condition in an organization when the authority to make decisions is broadly delegated to lower units. Centralization is the opposite condition where the upper hierarchy of an organization retains most decisionmaking authority.

The research took the form of an exploratory study using the descriptive and historical methods. The primary source information was gathered by questionnaire survey and telephone interviews and was largely perceptual in nature. Opinions and attitudes of CONUS maintenance managers based on their expertise and professional knowledge were the principal means of evaluating the problem. Historical sources including information concerning the Fort Ord and Fort Gordon Test Consolidations and the Fort Knox Maintenance System Simplification Study were helpful in the study of Army trends in organization design.

Four research questions were posed for this study. They were:

1. Should the maintenance categories of organizational, direct and general support for non-TOE activities be consolidated and centralized under a single manager at installation in CONUS?

2. Should both non-TOE activities and deployable TOE units be included in the consolidation and centralization?

3. Is the Army Maintenance Structure (echeloned by degree of complexity) applicable to the peacetime environment of a CONUS installation?

4. Can a model be devised for structuring installation maintenance organizations in CONUS?

The results of the study concluded that the answers to the research questions were as follows:

1. The categories of organizational, direct, and general support for non-TOE activities should be consolidated and centralized under a single manager at installations in CONUS.

2. Deployable TOE units should not be included in the consolidation and centralization. The study identified the major obstacle of centralized support to TOE units as the deployment requirement and the need to maintain a combat ready unit with all organic support to include maintenance. The study also disclosed that if a suitable augmentation or other method of maintenance support could be found, a trade-off might be feasible to having organic maintenance elements within the combat unit TOE.

3. The traditional Army Maintenance Structure with its inherent decentralization is not acceptable to the peacetime environment of a CONUS installation. Study results indicate centralization as the optimal concept. However, as indicated in question 2, deployable TOE units must not be deprived of their organic maintenance elements while stationed at CONUS installations even though duplication of maintenance capability with the garrison maintenance activity will occur.

4. A conceptual model for structuring CONUS installation maintenance organizations was devised. The model encompassed both TOE units and non-TOE activities stationed at CONUS installations. Analysis of the study findings and conclusions revealed that if a suitable trade-off could be found to meet deployment requirements of TOE units, there was a basis for providing decentralized maintenance support for all types of units.

With the recommendation of a totally centralized conceptual model for installation maintenance support structuring, there remained a requirement to find an alternative to support a rapidly deploying TOE unit. The Tactical Maintenance Concept was recommended to meet the needs of TOE units in the combat zone. The concept is based on providing total maintenance support to the battalion or equivalent-sized unit by attaching direct support maintenance detachments to the supported unit. The detachment would perform all

maintenance, organizational and direct, and would carry all repair parts to support the battalion. The tactical maintenance and CONUS installation maintenance concepts would have a common manpower and training base to optimize the structuring of maintenance organizations for each environment.

154. MOTIVATION AND JOB SATISFACTION FOR MIDDLE LEVEL CAREER ARMY OFFICERS, by Captain Colin O. Halvorson, USA, 80 p.

This study examines motivation and job satisfaction for middle level career army officers. A question is raised as to the efficacy of utilizing civilian motivational techniques in a military environment. It is hypothesized that the variables influencing job satisfaction for middle level civilian managers and middle level career army officers are associated in the population composed of these two groups. If this assertion is true the motivational techniques used in civilian industry would have applicability for motivating the military officer.

A review of the literature dealing with motivation points to several factors which mold motivational behavior patterns. For example, environment substantially impacts on the level of motivation that exists. Assumptions the leader makes about his subordinates greatly affect the approach taken to establish the desired level of motivation. Furthermore, the philosophy of the leader dictates the management system of a unit which in turn forms motivational behavior patterns for the individuals associated with it.

Testing the hypotheses of the study required descriptive research to gather data on the perceptions of student officers attending Command and General Staff College concerning the variables affecting job satisfaction. The Hackman Job Satisfaction Schedule was the instrument used to survey two groups of student officers. The data collected was statistically compared with data collected on middle level civilian managers. The two statistical tests used to analyze the data were the Kolmogorov-Smirnov Test and Spearman's Rank Correlation Coefficient. These tests provided the basis to test hypotheses and point out similarities and differences among the variables impacting on job satisfaction for the military officer and civilian manager.

It was found with a level of significance = .10 that the variables influencing job satisfaction for the two groups were associated in the population they formed. Additionally, three significant differences existed in the perceptions held by the two groups. The Army officer placed more value on being able to do work in his own way, receiving praise for work done, and being promoted than did his civilian counterpart.

Several conclusions were reached as a result of the statistical analysis of data and supplemental library research. Real motivation for middle level career army officers appears to come from being given a responsible job to do and being permitted to accomplish it in a manner desired by the individual. Motivation is further developed and reinforced by recognition, praise, and promotion. The key individual in this process is the immediate supervisor because he controls the environment which may or may not be conducive to the motivation described above. For this reason, the supervisor must be trained in the techniques and concepts which impact on motivation.

155. BREACHING WALLS IN URBAN WARFARE, by Major Anthony E. Hartle, USA, 87 p.

The process of urbanization throughout the world is making urban warfare a major aspect of future military conflicts. Past experience in such combat indicates that wall breaching is an important capability in facilitating the movement of ground units. Maneuver in strongly defended built-up areas is sometimes possible only if units move through buildings.

This study attempts to determine if there is a need for a wall-breaching capability in infantry units today. The investigation is focused on an analysis of historical experience, contemporary urban areas, and the capabilities of U.S. Army weapons.

Investigation reveals that a distinct need for a wall-breaching capability in infantry units does exist, and that current weapons and equipment readily available to the infantry rifle company are inadequate for this purpose. Further examination reveals that the means of satisfying the requirement are within the capability of current technology.

156. THE EFFECTS OF NUCLEAR WEAPONS ON POST WWII US/USSR CONFRONTATIONS INTENSITY PEAK LEVELS, by Major Robert F. Helms, II, USA, 213 p.

This study examines the escalation rates and intensity levels of US/USSR post-WW II confrontations in relation to the number of strategic nuclear weapons available to these nations to determine if a relationship exists. That is, have strategic nuclear weapons affected the rate of escalation or peak level of intensity of the post-WW II US/USSR confrontations. The study concludes that, while the role of strategic nuclear weapons has been insignificant in affecting either the intensity level or escalation rate of US/USSR confrontations, strategic nuclear weapons are an important factor in the pursuit of confrontation avoidance politics by the US and USSR since 1962. However, once a US/USSR confrontation becomes unavoidable and is enjoined, strategic nuclear weapons become a tool of force employed within the conceptual framework of a confrontation strategy. As this strategy involves ever increasing measures of escalation with the goal of persuading the opponent to concede and begin the de-escalation process, there is the ever present danger of miscalculation or misperception by the actors and a resorting to the use of nuclear weapons with catastrophic results. Herein lies the danger of nuclear weapons and the necessity for understanding their role and for bringing them under control. This study provides the reader with a better understanding of the role of nuclear weapons. Hopefully, it will influence others to accelerate efforts to bring nuclear weapons under effective control.

157. A STUDY OF RECOGNITION OF THE LESSER ACHIEVEMENTS OF LOW RANKING ENLISTED MEN, by Major Patrick R. Hughes, USA, 69 p.

Some noteworthy achievements of lower ranking enlisted men in peacetime often go unrecognized in spite of the commander's desire to do so because there is no existing procedure that will tangibly and appropriately recognize

the exact degree of achievement. For this study these noteworthy achievements are designated as lesser achievements. All officer-supervisors are familiar with them. They exist in degree and are generally identified as achievements that are exceptional and significant and should be recognized. The problem arises in that the existing recognition devices that provide tangible recognition such as a decoration do not come down to the level where these achievements occur. This leaves the officer-supervisor in a situation of neglecting the employee or using some substitute measure to recognize the employee's efforts.

Research in the Behavioral Science field revealed that providing praise and recognition of an individual's achievements creates a more stable and productive person. Failure of the person to obtain needed recognition can result in frustration, grievances, and non-productive behavior. This presents a fairly strong case against neglecting the employee.

Since the problem definitely exists the solution may not exist in the current awards system. If it does, other exigencies must obscure or prevent its comfortable implementation. One logical approach is to determine the minimum change to the existing system that would solve the problem.

Using this approach, an exploratory study was conducted with a survey questionnaire that asked if lesser achievements should be recognized at all. If an affirmative answer was received, the subject was asked to rank order the following five options as possible solutions to the problem.

1. Providing an appendage to the Good Conduct Medal and allowing its issue for achievement as well as service plus a numerical device to show the number of awards received.

2. "Forcing" the lesser achievement into an existing reward of some kind.

3. Developing some new awards for low ranking EM that are obtainable easier and faster for achievements that rank below an Army Commendation Medal and deserve a decoration while retaining the present system for all other enlisted and officer ranks.

4. If the individual is qualified in all other aspects, defer recognition and consider the lesser achievements toward promotion considerations.

5. Use the Certificate of Achievement if there was an appropriate decoration to be worn to show its receipt and the number of awards received.

These specific options were developed from experience, pilot surveys, and interviews.

The questionnaire also requested spontaneous open-ended commentary and experience data from the respondent. The respondents were students at the Command and General Staff College who had had command within two years prior to this study. Their selection for attendance at the College attested to their expertise. Their experience insured their familiarity with the problem, the systems, and possible solutions.

Company, detachment, and battery level commanders were selected since that is the lowest level where the needs of a large number of employees must be matched against the coverage or shortcomings of the existing awards, management, and promotion systems.

By this method the following two hypotheses were tested:

1. Lesser achievements should be tangibly and appropriately recognized.

2. A method of providing appropriate and tangible recognition can be identified.

As a result of the survey and the study, both hypotheses were accepted. The primary findings of the study were considered significant.

A. Recognition of lesser achievements was favored by a ratio of 6.69 to 1 by the subjects sampled.

B. From the alternatives offered, the first choice for recognition of lesser achievements was to devise a suitable decoration to accompany the existing Certificate of Achievement. The other options, abbreviated and listed in order of preference were: promotion, new awards, Good Conduct medal, and "forcing" the description.

The secondary findings of the survey were:

1. A strong anti-decoration attitude is present among some elements of the sample.

2. Pro-decoration subjects want lower level approval, prevention of malpractice, and the use of existing and new decorations.

3. Awarding promotion points for lesser achievements was considered by some subjects as providing adequate recognition.

4. Assorted administrative actions are felt to provide adequate recognition by some examinees.

5. Some additional ideas such as small cash awards and an Army Achievement Medal may have merit and could be studied further.

Implementation of the most popular option, the Certificate of Achievement was an appropriate decoration, is an attractive bonus of the study. Relatively few significant changes to the criteria contained in the awards regulation are required other than to design and authorize a decoration to be issued with the Certificate of Achievement. A specific decoration and suggested test procedures prior to its implementation are presented within the study.

The details of controversial issues, difficulties experienced, future study, and implementation of the primary findings are covered throughout the study as they arise.

158. THE FUTURE AVAILABILITY OF STRATEGIC RAW MATERIALS AND POSSIBLE NORTH ATLANTIC TREATY ORGANIZATION ACTIONS, by Major Eric A. Kevitz, USA, 105 p.

This thesis examines the question of the scarcity of strategic raw materials and the potential for the interruption or cut-off in the supply of these raw materials to the members of the North Atlantic Treaty Organization (NATO). Strategic raw materials are defined as those raw materials that are essential to national defense and consist of bauxite, chromium, cobalt, copper, iron, lead, manganese, mercury, natural rubber, nickel, phosphate rock, platinum, tin, tungsten, and zinc. Once the potential for cut-off of these materials is determined, the thesis examines several possible courses of action available to NATO to insure an adequate supply of strategic raw materials in view of the fact that most of these materials are located outside of NATO.

The recent events in the Middle East which culminated in the Arab oil embargo highlighted the fact that the Alliance is dependent upon many non-Alliance suppliers for its strategic raw materials. The oil embargo added a new dimension to the threat to NATO and revealed that the Alliance is unprepared for raw material cut-offs and does not have a cohesive plan to cope with such a situation. The obvious lack of unity and complete absence of any coherent policy on cut-offs may tempt other raw material producers to try a repetition of the OPEC oil embargo.

Yet even today, after the dramatic events of 1973, the threat is not fully appreciated because the best evidence available indicates that it is presently not possible for the producers of other strategic raw materials to seriously limit supplies. These conclusions are drawn from the fact that sources of supply are more diversified and can be readjusted by consuming nations. There does not appear to be a coalescing political catalyst. Substitution opportunities exist in most cases and stockpiles serve as a buffer. Finally, most of the producing countries depend heavily on the continued flow of mineral exports to pay for imports and to provide employment.

Yet, even though cut-offs of strategic raw materials appear remote at the present time, changes in the world situation could dramatically alter prior predictions. The success of the 1973 Arab oil embargo was almost totally unpredicted, and this thesis has attempted to illustrate that a similar situation could occur in the future with some other strategic raw material. It is possible that the confrontation of black majorities in Africa against white minority governments in Rhodesia and South Africa could provide a catalyst in uniting Black Africa. The black majorities might try to use their control of certain raw materials to influence (or pressure) Western governments. It is also possible that some type of military (guerrilla) action by Black African states against Rhodesia and South Africa could effectively cut off supplies of strategic raw materials from both black and white Africa.

The three strategic raw materials that create the greatest potential vulnerability are cobalt from Zaire and Zambia and platinum and chromium from Rhodesia and South Africa. Two other raw materials--copper from Zaire

and Zambia and phosphate from Morocco--also pose problems, but to a lesser degree. Nevertheless, they should not be ignored because of the potential damage of supply restrictions during war. During peacetime the United States can supply Western Europe's strategic needs in the event of a cut-off of African sources; however, such supply restrictions during a war would eventually influence the well-being and efficiency of the entire NATO labor force and could have important secondary effects if sustained over a long period.

This thesis looked at three courses of action available to NATO in dealing with potential interruptions in the supply of strategic raw materials. The courses of action were designed specifically to insure continued supplies from African countries, both black and white, but could easily provide the framework for a program to deal with all Third World producers of raw materials.

The three courses of action examined were, first, a do nothing approach and leave any action to individual member governments; second, a military approach to safeguard existing sources of supply; and, third, a pre-crisis preparatory approach to lessen damaging effects of any cut-off. The thesis shows that the third approach appears to be the best overall approach and offers the best chance for coping with any future cut-off.

159. AN INTERACTIVE LANGUAGE QUERY SYSTEM FOR RETRIEVING ALPHANUMERIC DATA FROM AN ARMY TACTICAL DATA SYSTEM, by Major Ian W. Larson, USA, 90 p.

For a decade the United States Army has been investigating the uses of computers in the area of tactical operations. While demonstrating that computer based tactical data processing systems can provide useful assistance, field tests have uncovered some operational problems. One major problem has been the inability of prestructured formats to meet user requirements of flexibility and generality in querying the tactical data system for alphanumeric data. The purpose of this study was to describe a query system, based on an interactive query language (IQL), as an alternative to this use of formats.

The methodology encompassed four steps. First, user requirements for interactive query were stated, based on an analysis of data flow in a division tactical operations center. Second, the assumed hardware and software capabilities of a tactical data system which would use the proposed query system were stated. Third, research of the literature and of existing systems having IQLs was conducted to determine the state of the art in IQL design. Fourth, a proposed query system was described. The query system was based on an IQL and designed to meet the stated user requirements.

The stated user requirements for interactive query specify, above all, that the query system be user-oriented. They also state that the query system be easy to learn and use, permit selective file and data retrieval, permit ad hoc queries to be formulated, and be designed for use by the non-programmer.

The research conducted indicates that the Data Base Management System (DBMS) represents the state of the art in IQL technology. A significant technical feature of the DBMS is the use of a command language designed specifically for querying and updating data files. The "self-contained" DBMS uses a high level, task-oriented language with a vocabulary intended for use by the non-programmer. While many of the features of DBMS languages would meet the requirements of the tactical data system user, the sophistication and complexity of the capabilities they generally provide would overwhelm all but the very experienced user.

The proposed query system describes a simple IQL with which the user can formulate queries to the tactical data system in two ways. The first way is to formulate the query in one step as a legal sentence of the language. The second is to formulate the query in a series of steps with prompting by the system at each step. The prompting instructions can be minimal or very detailed, depending on the user's choice, based on his desire or experience. The proposed query system also includes a number of other features such as the ability of the user to call on the system for assistance in formulating a query and the ability to save queries for later recall and use.

The study recommends implementation of the proposed query system on an experimental basis for evaluation by field users. It also recommends that related studies be conducted in three areas impacting upon query system design: the structure of the tactical data system's data base, the standardization of data terms and abbreviations, and the design of the tactical data system's command language, of which the query system language is a subset.

160. THE NUCLEAR WEAPON CAPABILITIES REQUIRED TO SUPPORT THE MILITARY AND POLITICAL USES OF NUCLEAR WEAPONS ENVISIONED BY SELECTED CIVILIAN STRATEGIC THINKERS, by Major Loren G. Lundquist, USA, 84 p.

A literature search focused on the works of civilian strategic thinkers revealed 20 distinct nuclear weapon roles. The roles included military and political uses which fell into categories of strategic offensive, strategic defensive, and tactical use. The roles were not all compatible with each other. An analysis of these roles identified 40 distinct nuclear weapon capabilities, each of which was necessary to support one or more of the roles.

A matrix was developed (table 5) which provides a weighted correlation for each of the 800 role-capability combinations. The weighting was in seven increments which ranged from the capability being mandatory if the role was to be supported, to the capability not being allowed if the role was to be supported.

Few of the capabilities had a positive correlation to a high percentage of the roles. The capabilities of delivery accuracy, of affordability, and that the weapon actually be in existence (deployed and combat ready) prior to commencement of hostilities had the highest percentages of positive correlation.

161. AN ANALYSIS OF THE PROCESS OF MANAGEMENT BY OBJECTIVES ADAPTED TO AN ARMY BATTALION, by Major D. Brent Pope, USA, 119 p.

This thesis provides an analysis of Management by Objectives and its probable application as a management technique in an Army active duty battalion in a peacetime environment. The study reviews the need for a more systematic, and yet people centered, approach to management of Army units in view of changes that have taken place in recent years. Research encompasses the basis for Management by Objectives and its successes and failures in business, education, government, and other military environments. This effort has been designed to examine problems related to implementation that may assist in Management by Objectives application in the Army. Based upon this research and the author's personal experience, a proposed system for use in an Army battalion is presented. Implementation problems are examined and key areas are emphasized to improve the probability of success. The overall objective of this project is to provide future battalion commanders a guide to:

--Assist in their decision to implement or not to implement Management by Objectives.

--Propose a system for application of Management by Objectives in an Army active duty battalion.

This study concludes that Management by Objectives is an effective method of combining the experience of proven techniques from business and industry with developments in the behavioral sciences in a management process that maximizes the attributes of both. A review of case studies where the process has been applied reveals significant improvement in goal direction, planning, and communication. From many successful applications in different types of organizations this approach has demonstrated universal relevance. It is significant to note that all cases examined claimed major improvements with this technique. The adaptation of Management by Objectives to an Army battalion requires an in-depth understanding of the key elements of the process and the basic factors of human motivation. With a thorough analysis of the battalion's functions and a careful, systematic approach, the technique can be tailored in a manner that provides the managerial environment for maximum focused improvement.

162. A MILITARY PERSPECTIVE OF INTERNATIONAL PEACEKEEPING: THE NATURE AND CHARACTERISTICS OF PEACEKEEPING OPERATIONS AND REVIEW AND EVALUATION OF SOME PEACEKEEPING CONCEPTS AND DOCTRINE, by Major Charles W. Raymond, III, USA, 139 p.

The original purposes of this research were to determine peacekeeping operations' nature and characteristics and to review and evaluate the ABCA concept and US Army doctrine. During the literature review, doctrine was evaluated as inadequate resulting in a new purpose to enhance doctrinal development. The case study method, with a structural-functional approach incorporating comparative analysis, was employed to examine three UN operations: UNEF 1 (Egypt), Cyprus, UNEF 2. The UNEF 2 was judged the best

example of a peacekeeping operation from a military perspective. The conclusions were that peacekeeping operations were political actions by military organizations for behavior control purposes, consent is the key to peacekeeping; the ABCA concept is adequate with modification for doctrinal development, and US Army doctrine can be adapted, with modification, to peacekeeping.

103. FM TACTICAL COMMUNICATIONS UNDER INTENTIONAL INTERFERENCE, by Captain Robert D. Rood, USA, 66 p.

This study is undertaken to determine whether it is possible to develop a realistic computerized mathematical model for FM tactical radios operating under the influence of enemy jamming.

A simplified model of the single channel communication system with interference is developed. The various parameters of this model which affect the quality of communications is then discussed. Specifically, performance data for the VRC-12 radio for various signal-to-interference ratios is introduced and a message quality indicator is developed for various received friendly and jamming signal strengths.

Next, mathematical relationships for signal propagation over various terrain is introduced. The specific communication links considered were those for air-to-ground, line-of-sight (LOS), and single and multiple obstacle paths. Consideration was also given to the moisture content of the soil as this is an important consideration at the frequencies involved in the analysis. A comparison is then made between the path losses predicted by the various mathematical relationships and actual field tests. It is shown that the developed expressions produce realistic results. These tested signal propagation relationships are then integrated with the VRC-12 radio's performance under interference to produce the final computerized model.

In addition to the terrain between friendly transmitter and receiver and enemy jammer and receiver, several other variables are incorporated in the model. The additional variables of the model include frequency, transmitter and jammer output power, antenna height and directivity and jammer location with relationship to the receiver antenna.

The completed model explains various interrelationships in this type of communication problem while answering the "what would happen if . . .?" question. This is done without actually constructing an operating system

The actual output of the computerized model tells the user whether he has excellent, good, fair, poor, or unsuitable communications for various battlefield deployments. By changing various characteristics of the problem, i.e., antenna gain, power output, obstacle between jammer and receiver, etc., a means of changing unsuitable communications to acceptable communications is developed.

In summary, the results of the analysis show that it is possible to develop a realistic computerized model for tactical communications in a jamming environment. Comparisons of the propagation portion of the model with actual field tests show the results to be an accurate indication of "real world" conditions while the integration of actual equipment performance under co-channel interference adds a realism to the model which enhances its usefulness as a training or planning device.

164. NEGOTIATING WITH THE NORTH VIETNAMESE: A MILITARY PERSPECTIVE, by Major John T. Thomas, Jr., USA, 128 p.

The Four Party Joint Military Team (FPJMT) was established two months after the signing of the Paris Agreement in January 1973. The purpose of the FPJMT was to negotiate the implementation of Article 8(b) of the Agreement which called for repatriation of the remains of the dead and an exchange of information concerning the missing in action. Each of the governments signatory to the Paris Agreement was represented on the Team: the United States, the Republic of Vietnam (RVN), the Democratic Republic of Vietnam (DRV) and the Provisional Revolutionary Government of the Republic of South Vietnam (PRG). After almost a year and a half, the negotiations ended when the DRV and PRG announced their decision to permanently cease their participation at the conference table.

This study describes the various activities of the FPJMT and analyzes the negotiations to determine the negotiating tactics and strategy used by the US and DRV negotiators. The results achieved by the US Delegation are noted. Based on the evidence available, a conclusion is made that the DRV Delegation was relatively unsuccessful in achieving their apparent objectives. A suggestion is made, however, that more information is necessary before the true success or failure of the DRV Delegation can be accurately measured.

A comparison is made of the tactics used by the US Delegation with some suggested tactics developed by Gerald L. Steibel who is a noted author on the matter of negotiating with Communists. The comparison revealed that some of Steibel's tactics were followed by the US Delegation, others were not, and one of Steibel's suggestions proved to be inappropriate when applied to the DRV negotiators. The thesis concludes with an observation that the US Delegation was unable to fully accomplish its mission primarily because continued US support to the RVN Government was of higher priority than recovering America's dead and missing.

165. PERSHING'S MISSION IN MEXICO, by Major John C. Thompson, USA, 59 p.

The Punitive Expedition led by Brigadier General John J. Pershing in Mexico from March 1916 to February 1917 in pursuit of Francisco Villa is one of the more obscure campaigns conducted by the United States Army. The changing role of the United States in the world should encourage Americans to reexamine the history which this country shares with Mexico. It is the purpose of this study to identify and examine the significant aspects of the Punitive Expedition and to provide an interpretive guide to the study of that subject.

Most of the sources used were published in the United States although a few are English translations of Mexican works. Also some Mexican materials which have not been translated were used. Few detailed accounts of the Punitive Expedition have been written but a wealth of information was found in general periodicals and professional magazines of the period as well as in memoirs, novels, history books, War Department records, and other government documents.

Private, moneyed interests appear to have had great influence upon politicians, advisers, and decisionmakers involved in Mexican-American relations during this period. American policymakers lacked sympathetic insight into Mexico's problems. President Wilson's ignorance of the Mexican psyche may have prevented him from ever understanding the almost universal rejection by Mexicans of any sort of American intervention in Mexico.

Many of the lessons learned from the experiences of Pershing and his men were ignored by Americans preparing to engage in activities of a similar nature in Vietnam fifty years later. The enemy in Mexico was an equally elusive one operating with the support of local partisans. The failure of America's political and military leaders to understand the realities of Mexico's internal situation did much to create than exacerbate a situation which could have brought the two countries to war.

Perhaps the most important lesson to be gained from the study of the Punitive Expedition concerns General Pershing and the way he responded to the many challenges confronting him. The story of his responsiveness to his civilian leaders appears to offer a model study in proper civil-military relations. The diplomatic considerations which restricted Pershing's freedom of action compounded the problems caused by inaccurate information, inadequate maps, faulty equipment, poor communications, an uncooperative host government, and overextended supply lines. In spite of numerous handicaps he maintained a high state of training and esprit within his command while satisfying his civilian and military superiors. More importantly he kept the United States out of a war with Mexico at a crucial time in the world's history.

166. RECRUITMENT OF PHYSICIANS FOR THE ACTIVE ARMY, 1970-1980, by Major William M. Vance, USA, 49 p.

The Army Medical Department method of procuring physicians is examined from several aspects: (1) a historical review of physician procurement during the 1940-1973 draft period with an expiration of draft dependent programs; (2) the Army procurement plan as a forecast of anticipated requirements and the need for volunteer physicians to offset the loss of the draft and draft-motivated programs; (3) the current Army procurement system and its supporting assets including the personnel counselor system and contract advertising capabilities; and, (4) comparison of physician procurement techniques used by military and civilian recruitment agencies.

Several conclusions are drawn after examining the history of physician procurement, the current national situation regarding physician manpower, and the projected needs of the Army coupled with available assets that can

be devoted to procurement. The Army is forced to compete for physicians. It has a relatively well-developed and supported procurement effort dedicated to scholarship and medical student programs, but not to the qualified volunteer physician. Army Medical Department conservatism and sensitivity to any criticism directed toward recruitment efforts has inhibited the use of available assets to include common commercial advertising techniques.

Stress is placed on the potential for increased procurement performance if available assets are effectively used.

167. POLICY PRECEDENTS: UNITED STATES INVOLVEMENT IN VIETNAM 1944-1961, by LTC Joseph A. Walton, USA, 159 p.

This thesis identifies a force, inherent in the national security decisionmaking process, which contributed to the American involvement in Vietnam. Termed "policy precedents," this force may be outside the control of the unwary decision maker and can result in irrational international behavior on the part of the nation. Once a policy or program becomes totally enmeshed within the governmental organization it becomes such a firm commitment that deviation from within becomes virtually impossible. At this point the means supplants the end and past policy drives present and future policies. Flexibility in decision making is lost and only a force from outside the government can effect a change.

To develop this thesis the author employs the historical method and traces the development of American policy as directed toward Indochina and Vietnam during the period 1944 to 1961. Policies are analyzed to isolate American national interests and objectives, to determine the courses of action considered, and to identify the stated rationale for selection of the final policy. The "classical" or "pure-rationality" decision-making model is employed to assist in this analysis.

To accomplish this research a great deal of material was reviewed, analyzed, and isolated. The available literature, both the limited primary and voluminous secondary sources were reviewed. Certainly, the most significant limitation was the scarcity of primary sources. Accordingly, heavy reliance was placed on the two major editions of the Pentagon Papers, presidential papers, State Department publications, and the writings of the major participants and their advisors.

This study shows that the increasing United States involvement in Vietnam from 1941 to 1961 can be explained, at least in part, by the impetus given the decision process by "policy precedents." It clearly shows that American policy evolved from relatively minor incremental but always escalating changes. With the exception of the initial post-World War II policy of containment, the broad global policies enunciated by American political leaders had little impact on the American course in Vietnam. Instead, this involvement was driven by commitments which were firmly established as early as 1950.

168. AN ECONOMIC AND ECOLOGIC COMPARISON OF THE NUCLEAR STIMULATION OF NATURAL GAS FIELDS WITH RETORTING OF OIL SHALE, by Captain William A. Wise, USA, 93 p.

This study discusses two possible alternatives for the national dilemma with regard to energy fuel. The methods that will be addressed are: the recovery of natural gas by nuclear stimulation and retorting of oil shale to obtain crude oil. The findings are summarized from the limited employment of both methods in the Piceance Basin of Western Colorado. Particular emphasis is given to a review of the related literature. The similarities and differences of each method have been examined first with regard to ecologic considerations and second from the standpoint of economic considerations. Finally, each method was contrasted in the light of which would be the most economical and which would do the least amount of permanent damage to the ecology.

The study concludes that given a fixed amount of fiscal assets and the need to do minimal harm to the environment nuclear stimulation of natural gas fields is the more logical option.

169. ECONOMIC PLANNING AS IT AFFECTS MILITARY STRATEGY: THE RATHENAU AND SPEER SYSTEMS OF MODERN INDUSTRIAL WARFARE (1914-1945), by Major Allen R. Wissinger, USA, 217 p.

Advancements in science, technology, and industrialization during the late-nineteenth and early-twentieth centuries had a subtle and almost undetected impact on the conduct of warfare. The increased lethality of weapon systems, the more efficient means of mass-production, and the improved lines of communications, especially the railroads, caused most military and political strategists to overestimate their national power. This misperception was compounded by the inability to recognize and exploit the military advantage offered by technological advancements. Instead of developing new doctrines, tactics, and techniques to complement and maximize the advantages of improved technologies, these planners relied on doctrines that had proven successful in the past. This was especially true during the opening phase of the First World War.

By relying on outdated tactical doctrine, industry was relegated to providing the "sinews" of war prior to the first battle. Limited wars were to be fought with stockpiled material and no comprehensive plans were made to insure an uninterrupted flow of supplies from the factory to the front, in the event the war lasted longer than anticipated. No meaningful contingency plans were developed beforehand for mustering the resources of the nation in support of final victory. In short, the economic element of power was not significantly considered during strategical planning.

This study focuses on this strategic failure by using the German experience in World Wars I and II as an example. It should be noted that the failure to properly access and employ the economic element of power was not unique in Germany. The other industrialized nations of the world were just as negligent of this omission.

This study has been divided into four major parts: the industrialization of Germany prior to World War I; the Rathenau System of war production during the First World War; German military and economic preparation for war from 1919-1939; and the Speer system of war production during the Second World War. The analysis, basically, follows a chronological course, and results in an examination of those decisions and events which influenced Germany's economic and military potential during both world wars. The last chapter is an assessment by the author of the major lessons learned from both world wars.

The conclusions of this study indicate that any industrialized nation contemplating war, defensive or offensive, should prepare detailed plans for mobilizing the human and national resources of the nation for total war, even if limited martial effort is the objective. Additionally the study shows that centralization of strategic and economic planning at the national level is key in achieving the national objective during war.

170. THE 16 DIVISION FORCE: ANATOMY OF A DECISION, by Major Creighton W. Abrams, Jr., USA,

The sixteen division force decision is analyzed primarily from the military perspective of its originator, General Abrams. However, the perspectives of the Congress, of the Secretary of Defense and the Secretary of the Army, and of the Army staff planners who must make that decision work were also vital aspects of the decision and are accordingly analysed.

The significance of the sixteen division force decision, which was broached to Congress in early 1974 and presented as a programmed force in the February 1975 budgetary request for FY 1976, lies in the fact that the Army is asking to increase its number of divisions from thirteen to sixteen without requesting an increase in its end strength of 785,000. The last time the Army had sixteen divisions was in 1964, when the end strength was 969,000, almost 200,000 more than now. The decision is therefore part of the impetus for a major restructuring of the Army which will produce more combat units, fewer support units, and fewer headquarters. The "tooth-to-tail" is being adjusted in favor of the "tooth."

The basis for the decision was not a carefully worked out staff study, but rather an estimate of the situation--roughly analogous to a commander's use of the factors of METT (mission, enemy, terrain, and weather, troops available). The factors of mission and enemy, or the strategic response of general purpose forces (primarily ground forces) to a given threat, are derived from considerations of the Soviet military evolution since World War II, the perception that the American role in Southeast Asia was less than satisfactory, and the implications of those two factors for all contingencies, but particularly for the primary one, NATO. Essentially, the Soviets have achieved nuclear parity to a degree which undercuts any American option to escalate from ground combat to a tactical or strategic nuclear "solution." More reliance is therefore placed on being able to control a conventional attack with conventional ground forces, forces in which the Soviets are clearly superior in the NATO arena. The "trip-wire" strategy, if it existed, does no longer.

NATO is the basis for ground forces sizing and planning because of its value and because of the very clear threat of Soviet and other Warsaw Pact nations in the European theater. American ground forces are planned on the basis of being able to respond simultaneously to this major threat as well as to one minor one. Steady Soviet improvements over the last ten years in quality and quantity of ground forces and the American drawdown from Vietnam have degraded the military balance to an extent which requires a clear signal by us that the drawdown is over. The increasing multipolarity of the international arena also increases the likelihood of using the three new divisions in response to a minor contingency.

The terrain and weather, the political constraints which were analyzed before deciding to attain sixteen divisions without increasing the end strength of 785,000, was chiefly two. The first was that 785,000 was about all that the traffic would bear: it was what the Army thought it could recruit into an all-volunteer force; and it was seen as all the Congress would let them recruit. The second constraint was strong Congressional concern that the Army, which was thought to be primarily a "labor-intensive" force, was too support-heavy, too much involved with equipment, particularly in research and development. This acted as a constraint because it made one option, that of converting the Army to a more equipment and support-oriented, "capital-intensive" force less viable. Congress, it was felt, simply would not support this option without making drastic reductions in manpower. These fiscal "savings," however, would not be put back into the capital, or support structure.

The factor of troops available, or the tactical and managerial consequences of the decision, is internally the most visible one because it means that the Army must restructure its assets and manage them more intensively than ever before. Essentially, as the Army Chief of Staff General Weyand has stated, it means "finding new ways of doing business." It also means that, because the restructuring has been speeded up by the August 1974 Nunn Amendment, trying to attain sixteen divisions by the end of FY 1976 will cause short term degradation of Army readiness. Tactically, the force will be lighter, but, because of this, it will also get to the fight sooner.

There are some short-term risks in readiness attendant to attaining sixteen divisions quickly without increasing the end strength of the Army. Nevertheless, by taking that initiative, the Army has re-established its credibility with the Congress, which has already responded by, for the first time in five years, not reducing Army's end strength, has reoriented the Army internally toward more intensive management of its assets, as well as toward its primary mission of fighting, and has provided a signal to adversaries and allies alike that there is an irreducible minimum to American resolve.

171. THE ORIGINS AND ADAPTATIONS OF THE PRINCIPLES OF WAR, by Major John I. Alger, USA, 118 p.

The origins and adaptation of principles of war into the doctrine of certain western powers has been shrouded in doubt and confused by widely-held misconceptions. By examining the military thought, as expressed in

books and articles on the theory of war, in lectures delivered at prominent schools of war, and in official publications of France, Germany, Great Britain, and the United States, the varying concepts of principles of war held by these nations can be viewed, and the forces which influenced their development can be in some cases identified and in others suggested.

The prevailing modern view of principles of war, that they are few in number and can be easily expressed, originated in the Napoleonic era, but until the revision of service manuals in the post-World War I era, the principles were rarely expressed as definite lists of aphorisms. This format has become widely accepted in Great Britain and the United States and to a lesser degree in France, but the origins of the concept have been generally misunderstood--especially since World War II. Some commentators have traced the origins of the modern principles to Ferdinand Foch, some to Clausewitz, and some to J. F. C. Fuller. A good case can be made for Fuller, but still severe difficulties in discovering the origins exist. Part of the difficulty resulted from the recollections of Fuller, whose role in the origins has been overstated in his memoirs and in other of his many publications. Part of the difficulty resulted from the fact that the origins of concepts are often elusive and from the fact that concepts often become widely accepted before they are articulated in written form.

The first nation to officially adopt a definitive list of principles of war was Great Britain. They appeared in the Field Service Regulations (Provisional) of 1920. A list, clearly influenced by the official British list, appeared in United States Training Regulations in the following year. The British principles were brought to the United States' doctrine via the lectures of a faculty member at the United States General Staff College. This transition was especially significant, for the concept of principles espoused by Fuller and the British was explicitly rejected in the immediate post-World War I period in France and Germany where Fuller and other British authors were widely studied and emulated. But even in France and Germany a trend toward the more definitive identification of principles of war has been evident since World War I.

The history of the origins and adaptation of the modern concepts of principles of war would be incomplete without an attempt to reveal at least some of the forces which encourage the trend toward the more definitive statement of principles. The mass armies of the twentieth century created the need for a doctrine of war which could be readily inculcated into the mind of mobilized citizen-soldiers. Science and technology, which were intimately connected to many of the activities of war, affected the way men thought about their tasks, and ideas about the conduct of war tended toward the simple and definitive expressions found in the language of science. Military history, encouraged in the curricula of nearly all modern military schools, found justification in the belief that the study of the past would reveal and reinforce the true principles of war as demonstrated by the greatest captains of the past. The schools themselves were instrumental forces in the trend, for the teacher's first task has been to simplify the complexities of war for the benefit of the student. The principles of war ideally fulfilled this requirement.

Many individuals contributed to the modern expression and acceptance of principles of war, but of far greater influence was the great variety of impersonal forces that created different concepts of principles in the four nations examined in this study. In spite of common experiences, and the borrowing and sharing of ideas among the western powers on the conduct of war, its principles have assumed chameleon-like characteristics.

172. AN ANALYSIS OF ALTERNATIVES TO VERBAL FM RADIO TACTICAL COMMAND AND CONTROL COMMUNICATIONS, by Captain John W. Beaver, USA 57 p.

Three threats to the current tactical command and control communications system are identified and examined. These threats are overcrowding the frequency spectrum, electronic warfare, and the electromagnetic pulse effect. When these threats are considered in the light of the number of FM radios employed in the armored division for command and control communications, questions arise concerning the adequacy of the command and control system used in the division. Alternatives to verbal FM radio command and control communications do exist. The purpose of this research was to identify and evaluate those alternatives. This was accomplished by using a scenario for an armor battalion in the offense in a European conflict. The doctrinal alternatives--wire, messenger, sound, and visual--were war gamed against the required communications needlines. The number of messages required for battalion operations over a 24-hour period were derived from several current studies.

Although a single replacement communication means does not exist for FM voice radio, armor battalion commanders need to accomplish several actions. The significant threat posed by the proliferation of electronic devices, the electronic warfare capability of the Soviets, and the possibility of nuclear warfare on the future battlefield make it essential that commanders prepare their units to operate using the alternative means of communication. It is essential that tactical commanders train their units in decentralized operations, electronic counter-countermeasures, and integrate the alternative means of communication into training exercises. In the midst of battle is too late to train commanders and staffs in command control operations which do not include FM voice radio communication.

173. UNITED STATES NATIONAL WILL: A PSYCHODYNAMIC THEORY, by LTC Robert O. Begtrup, USA, 99 p.

The work addresses the problem of the concept of national will. Present concepts are held to be inadequate because they arbitrarily separate national will from the political decision-making process and because they are psychologically unsound. As a result the concepts are of limited value in understanding the way in which national will is expressed in the United States. An hypothesis: "United States national will is the collective intent of the group empowered to decide policy on a given issue" is proposed. Utilizing the concepts of group psychodynamics developed by W. R. Bion, a model for United States national will is constructed from the hypothesis. The model

requires that issues be defined in relation to the psychodynamics of the group involved with the particular issue. It shows how changes in the issue can result from communications within the group or from communications to outsiders. Such changes in issue are held to produce a new group, whether or not the group membership changes. The model also shows that national will becomes the expression of the decision made by the group, provided the group controls the resources necessary to enact its decision.

When this model is applied to two case studies in recent American foreign policy action, the Bay of Pigs invasion and the Cuban missile crisis, it fits the data available. Also, the model allows for more complete understanding of how these foreign policy actions related to public opinion at the time than do other concepts of national will.

The new concept has implications for policy-makers and suggests areas for further study which might lead to more effective leadership of public opinion.

174. GALAHAD REDUX: AN ASSESSMENT OF THE DISINTEGRATION OF MERRILL'S MARAUDERS, by Major John B. Gaither, USA, 89 p.

The China-Burma-India Theater was the least distinctive major arena of World War II. General Joseph Stilwell was tasked to perform concurrent diplomatic and military miracles in pursuit of Allied victory. His mission of keeping a reluctant China in the war depended upon opening a ground line of supply and communication, to augment the "Hump" air routes that linked India and China. To do this, the Japanese had to be driven from North Burma. Training and equipping Chinese troops to accomplish this mission required several months.

On the eve of the Chinese attacks in October 1943, a lone American infantry regiment debarked in Bombay, India. By August 1944, this ill-starred force had won accolade and suffered disbandment. During its brief, frenetic history, this first U.S. ground combat unit to fight on the Asian land mass in World War II, was known variously as Shipment 1688, Force Galahad, the 5307th Composite Unit (Provisional), and Merrill's Marauders. This organization's participation in the North Burma Campaign lasted five and a half months and culminated in the capture of Myitkyina. The seizure of Myitkyina and its airfield permitted Allied transports to fly around the Himalayas instead of over them, and contributed greatly to the success of subsequent offensives to break the blockade of China. Although it was an achievement of high order, Galahad paid a price.

The battles in Burma involved many enemies: the Japanese, the environment, and the morale of the Marauders themselves. Galahad Redux is an attempt to analyze the disintegration of Merrill's Marauders, by emphasizing the intangible, subjective factors present in the leadership environment. The focus is on the disbandment of the 5307th in August 1944. The causes of the unit's loss of integrity are related through the perceptions of five men who were there. Their recorded testimony makes it clear that poor discipline, the effect of rotating commanders, a feeling that the unit was not good enough, a lack of attention, and broken promises led to a complete breakdown

of morale in June 1944. As morale faltered and failed, esprit, discipline, and fighting efficiency withered, until there was but a shell of a unit remaining. In a sense, Galahad was not disbanded, it had already ceased to exist. Having provided the tools of war, the Marauders lost their heart in the fighting.

The true validity of any examination of the intangible aspects of combat power lie in the eye of the beholder. Subjectivity may lead to varying interpretations of events not clearly explained by the historical record. Broken promises can be viewed as the principal cause of Galahad's collapse. One man, General Merrill, played the leading role in enunciating and abrogating the two promises that struck most directly at the unit's heart. It is possible that he chose expediency over integrity at a critical point in Galahad's history.

Re-telling the Marauder story one more time hopefully reinforces two aphorisms that are deeply embedded in American military traditions. One is that soldiers' minds are as important as their numbers. The other is that force of character is a commander's greatest strength.

175. THE CAUSES OF WRITING PROBLEMS IN THE ARMY, by Major John D. Bergen, USA, 68 p.

Military writing has been criticized for being stilted, verbose, and ambiguous; such poor writing is pejoratively called "pentagonese" or "militarese." The Army has made numerous attempts to improve its written communications because it recognizes that its writing problems cause loss of money and man-hours as well as critical delays and confusion. However, those attempted solutions did not follow from a comprehensive study of the causes of the problems. This study identifies the causes of the writing problems of Army officers.

The thesis considers the effects of ability, attitude, and pressures on Army writing. First, it seeks to determine whether the problems are caused by a basic lack of writing ability in the officer corps. The study then attempts to understand if the source of that cause lies in the education, either civilian or military, of the officer or if it is due to a lack of opportunity to acquire necessary writing experience in the early stages of a military career. The attitudes of the military profession are also analyzed to determine the general writing preferences and aversion of Army officers and to consider whether the military evaluation system reinforces positive writing attitudes. Finally, the various pressures which might adversely affect organizational writing are examined to determine if they are operating within the military organization. These pressures are categorized as environmental, managerial, or personal, depending on their source. Such a comprehensive study of ability, attitude, and pressures within the military profession should provide an insight into the causes of poor Army writing.

Three research methods are used to discover all the causal factors: literature research, survey, and testing. Based on the assumption that many of the military's writing difficulties are similar to those in any large organization, the literature research seeks to understand the causes of organizational writing problems from the works of authorities in the fields

of business communications and organizational psychology. It also considers the general writing situation throughout American society, since the Army officer is a product of the academic institutions of that society and many of his writing habits are formed by the societal communication practices. The findings from the literature research are empirically tested for relevance to the military situation by a survey of 166 Army officers attending the U.S. Army Command and General Staff College. In addition, the survey tests the various causes hypothesized within the categories of ability, attitude, and pressures. Finally, the diagnostic testing of an entire Command and General Staff College class with a standardized English composition examination demonstrates the magnitude of the Army's writing problem based on national standards.

Diagnostic testing indicated that Army officers as a group are average writers, although a significant number (18.5%) of those tested were below national minimum writing standards. The basic cause of Army writing difficulties is found to be the failure of the American education system to teach students to write properly and the failure of the military schools to compensate for those early inadequacies in preparing the Army officer to successfully perform his military writing tasks. Army officers express little preference for writing assignments and the military profession offers minimal reinforcement of good writing attitudes. The resulting attitude of the Army officer toward writing is a neutral one. In the pressure category, the manager seems to be the source of most writing pressures. Army writers feel that managers do not adequately define writing objectives for their subordinates, thus causing a doubt and confusion which results in vague and verbose writing. Managers also over-supervise through excessive reviewing of written communications, thus causing the writer to have difficulty focusing on his ultimate reader. The causes, then, are a complex combination of educational deficiencies, neutral attitudes, and inadequate management practices.

This thesis recommends further study of methods which can be employed to alleviate or eliminate these specific performance, attitude, and leadership deficiencies. Since many of those deficiencies are academic in nature, they can be remedied if the military education system addresses the needs of army writers and managers which have been identified in this study.

176. THE FEASIBILITY OF ESTIMATING THE CONTRIBUTION OF ARTIFICIAL OBSTACLES TO FORCE PERFORMANCE, by Major Howard E. Boone, USA, 122 p.

This thesis focuses on the study of the contribution which artificial barriers make to the combat process. This problem area has been of particular concern in force structure analyses at the Department of the Army level. The U.S. Army has acknowledged its commitment to barrier operations by stated doctrine, significant stockpiles of barrier materials, and war plans which allocate significant portions of deployed forces to the execution of barrier plans. In the environment created by reduced force levels and inflationary budgets the high level decision maker faces the continual dilemma of deciding where to accept force reductions and how to adjust mission requirements. To be competitive in that environment the barrier mission must be assessed on the basis of its contribution to the force mission. An acceptable analytic method has not been developed which will provide that assessment.

The military community has generally accepted three qualitative descriptors as representative of the barrier contribution—direct attrition, target enhancement, and delay. Direct attrition refers to opponent losses inflicted by landmines. Target enhancement is defined as any improvement which accrues to the defender's weapons as a result of the employment of artificial obstacles. The supporting research for this thesis indicates that improved methods for assessing these two impacts either exist or are under development. The impact of delay is then the appropriate target for additional analytic effort.

Existing historical data and analyses were assessed in an attempt to define qualitatively the impact of barrier delay. That research indicates that the use of artificial obstacles contributed to several important combat capabilities. Among these were the capability to exercise economy of force, break or maintain contact, prepare subsequent positions, and develop intelligence. Unfortunately the employment of a barrier did not guarantee these capabilities. Thus delay is significant only if the commander has the freedom to employ other forces assets in a manner which makes the delay useful. The resulting conclusion is that any attempt to assess the barrier impact by explicitly measuring delay would not provide adequate representation of the barrier function.

To provide a useful method for assessment, the analytic effort was then directed to the development of a model which could portray freedom of action. Freedom of action in this case is being defined as the capability to select alternative courses of action, one of which is the artificial barrier, for accomplishing the force mission. The creation of that environment required a modeling technique dissimilar to those currently used in production modes to support force structure analysis.

The technique selected to support this thesis was a computer simulation war game developed on an experimental basis at the Research Analysis Corporation. The war game uses a basic dynamic programming algorithm to represent defensive combat in an environment where the defender is permitted to select courses of action from an admissible decision list in an attempt to maximize his forward edge of the battle area (FEBA) position. This technique was adapted for the barrier problem in a prototype model called the Barrier Effectiveness Analysis Revision (BEAR).

The initial construction of the BEAR model was subsequently invalidated by the discovery of a coding error in the computer program. The correction of that error led to a major revision of the model. The results presented in chapter IV cannot, therefore, be considered valid. That discussion does provide key insights for structuring an analysis using this model.

The appendix to this thesis includes sample coding and output for both the original model and the revised version. A discussion of the salient differences and their impact is also included. Generally, the barrier option appears less attractive when compared with other firepower options than indicated by the original results. The capability of the modeling technique to represent the barrier in a freedom of action environment is, however, maintained.

The intent of this thesis was to prove the feasibility of a technique for studying the barrier problem. The conclusion that the particular technique recommended by this thesis is feasible, does not appear to be invalidated by the difficulties encountered in structuring the model. Recommendations for a second generation model with a more flexible representation of possible Red strategies and a concentrated effort to develop Blue decisions which accurately reflect the impact of the simulated time period continue to be appropriate.

177. THE EVOLUTION OF THE ADVANCED ATTACK HELICOPTER, by Major Dante A. Camia, USA, 276 p.

The United States Army is committed to the development of an advanced attack helicopter (AAH). The problem associated with this research endeavor encompasses tracing the introduction, evolution, and development of the AAH. The record of the past and present was examined to increase understanding of what transpired, to resurrect facts about it, and finally to draw conclusions.

Extensive research was conducted in the facilities of the U.S. Army Command and General Staff College Library. Numerous letters requesting assistance in specific areas were dispatched. Addressees included, but were not limited to, COL Jay D. Vanderpool, USA, Ret.; GEN Hamilton H. Howze, USA, Ret.; LTG Harry W. O. Kinnard, USA, Ret.; and BG Samuel G. Cockerham, USA, AAH Project Manager. Other addressees included two military museum curators, four aircraft manufacturers, five professional societies, and twenty-four editors, military information officers, and military agencies.

In detailing and documenting the process of the introduction, evolution, and development of the AAH, the author collected, catalogued, and included one hundred and three photographs. Included are seventeen photographs of individuals and groups who were principal agents in the historical process. The remainder of the photographs details three elements: first, the developing helicopter; second, the developing helicopter armament subsystems; and, third, the integration and exploitation of technology previously associated with the Advanced Aerial Fire Support System and currently being applied to the AAH.

The study resulted in the assemblage of extensive information in addition to that which is contained specifically in the review of literature portion. This information is contained within the appendixes and bibliography. Of particular note for interested readers is the significantly complete chronology.

During the review of literature, the author identified and confronted two distinct challenges. First, to establish the specific organizational framework within which military aviation developed. The study determined that these included:

1861 - Balloon Corps, Army of the Potomac
1862 - Balloon Corps of th· Signal Corps
1907 - Aeronautical Divis of the Signal Corps
1914 - Aviation Section of the Signal Corps
1918 - Air Service
1941 - Army Air Forces
1947 - United States Army

With the organization established into which the AAH would ultimately be introduced, the second challenge was to trace the following:

First: the introduction of the helicopter into the U.S. Army;

Second: the maturation of the helicopter initially as an innovative mode of battlefield transportation and, subsequently, as a mobile, aerial weapons platform;

Third: the evolution of the first, crudely armed helicopters into sophisticated advanced attack helicopters.

Three distinct phases in the process of developing armed helicopters became evident. The first phase, 1942-1955, consisted of occasional interest in arming helicopters characterized by relatively unsophisticated lash-ups of a weapon to a helicopter. Phase two, 1956-1965, was characterized by significant progress in developing armed helicopters. Initially, it was characterized by enthusiastic experiments with fabricated subsystems by such notables as COL Jay D. Vanderpool. In the latter stage of this phase, a marked advancement occurred; specifically, the introduction of the Cobra, the first helicopter designed specifically to shoot. Phase three, 1965 to the present, began with the award to Lockheed-California of the Advanced Aerial Fire Support System (AAFSS). This phase, largely incomplete, witnessed the cancellation of the AAFSS program on 9 August 1972 and resultant delay in introduction of the proposed AAH.

The study resulted in the following conclusions:

1. Aviation as an adjunct of the United States military establishment can be traced to the Balloon Corps of the Army of the Potomac, 1861. Thereafter, six distinct reorganizations and redesignations have occurred culminating in the United States Army and its organic aviation elements.

2. The historical process of introduction, evolution, and development of the AAH occurred in three separate, identifiable phases. The latter phase is incomplete in that the end product, the AAH, has not yet been produced.

3. At least twice, in two distinct phases of historical evolution, the United States Army or military equivalent of the time, rejected either helicopters or the Advanced Aerial Fire Support System AAFSS because of technological sophistication.

4. The result in both cases has been a quantifiable delay in the process of achieving the AAH as an end product. In the first instance, the cancellation of the deBothezat contract, a delay of twenty years resulted, 1922-1942. In the second instance, the cancellation of the AAFSS, a delay of approximately ten years resulted.

5. The RDT&E process contains a degree of technical risk which has been proven to be a significant factor in the helicopter weapon system development process. The technical risk associated with development of military hardware is directly related to the degree which the RDT&E process strains the current state of the art.

6. The United States Army or its military equivalent of the time has been associated with the integration of helicopters and their application in military roles for fifty-seven years. Thirty-three years have elapsed since the introduction of the first practical helicopter. Thirty-three years have elapsed since helicopter armament experiments commenced.

7. The U.S. Army has made significant progress in helicopter armament subsystems during the last twenty years. During this period, one helicopter designed specifically as an aerial weapons platform; i.e., to shoot, has been introduced in the U.S. Army. This occurred during the last half of this twenty-year period. To date a totally integrated aerial fire support system employing a helicopter has not been developed.

8. With the introduction of the AAH in the early 1980's, the process of evolution of a helicopter aerial weapons system will mark four decades of gradual refinement. It will follow, by approximately six years, a Soviet introduction of a comparable advanced attack helicopter.

178. HELICOPTER ANTITANK WEAPONS SYSTEM: AH-1Q OR OH-58Q?, by Major Edward W. Cavanaugh, Jr., USA, 112 p.

The viability of and the necessity for an antitank helicopter (ATH) is reaffirmed in this unclassified study. The author develops the need for and the feasibility of a relatively small, simple and inexpensive ATH to replace the current and still developmental AH-1Q in its pure antitank role. Key measures of effectiveness criteria are discussed, developed, and both systems are then compared and evaluated. Economic comparisons are also used to test the hypothesis: "If combat effectiveness and economic considerations are of paramount importance in the ATH, then modification of existing OH-58A's to OH-58Q's would provide the better antitank weapons system." The author concludes that the OH-58Q with four TOW missiles is the better system. After validation with classified studies, the author recommends that the number of ATH's required to replace or supplement the AH-1Q's in the pure antitank role be determined and fielded now--vice five to ten-years in the future.

179. AN ANALYSIS OF COMMAND AND CONTROL DOCTRINE FOR THE INFANTRY BATTALION DURING THE ATTACK, by Major Norman K. Chung, Jr., USA, 93 p.

Success on the battlefield relies heavily on an effective command and control system through which the commander coordinates fire and maneuver to apply the decisive combat power at the critical place and time. This study focuses on the command and control system in use by infantry battalions during the attack in an attempt to determine whether or not there is a requirement for new or modified doctrinal guidance on which the commander can base the establishment of his command and control system. Existing doctrine is compared with current practices in an effort to determine how closely they match and whether current practices are functional from a higher echelon's functional perspective.

A survey of personnel who have served in key positions in infantry battalions was made with the intent of providing the data base on which to draw conclusions concerning current practices in the field. When synthesized with information gleaned from doctrinal materials, the major conclusion was that new doctrine was in fact required and was further addressed under specific recommendations as to where and in what circumstances the doctrine should apply.

180. MILITARY CONTINGENCY OPERATIONS: THE LESSONS OF POLITICAL-MILITARY COORDINATION, by Captain Wesley K. Clark, USA, 157 p.

This thesis investigates the utility of conventional military intervention by Western Powers in achieveing their short-term foreign policy aims. Through a survey of the literature of political-military coordination, case studies of contingency force interventions, and comparative analysis of the interventions, factors fundamental to successful contingency operations are developed.

The study finds that many contingency force operations have succeeded in attaining short-term foreign policy objectives. Operations designed for overt coercion have been less successful than interventions to defend territory or support friendly governments. Situational constraints in operating directly against hostile powers and incurring risks of escalation to nuclear warfare are found to be important elements in overall failure. Clear definitic . and careful coordination of tactical and strategic military objectives were required in successful defensive and stability operations. Precise delineation of military objectives was not necessary to achieve coercion through deployments of forces; however, once these forces engaged in active combat operations, military success was a necessary but not sufficient precondition for overall success. Future contingency forces will need additional capabilities to deploy sizable armored forces to achieve coercion and defense objectives.

181. THE PERCEIVED THREAT OF AFFIRMATIVE ACTION POLICY, by Captain John L. Condon, Jr., USA, 100 p.

This study was an attempt to measure the degree of perceived affirmative action threat held by white Command and General Staff College officer students.

Simply stated, affirmative actions are positive steps or measures which go a step beyond de jure equal opportunity, and attempt to make allowances for social and economic deprivations experienced by some soldiers.

The researcher hypothesized that a significant threat feeling was perceived by these officers. An implicit assumption was made that affirmative action threat was a phenomenon which was separate and distinct from general racial feelings.

The hypothesis was not rejected, as measured by the research instrument. In fact, a very high degree of affirmative action threat feelings were expressed by the respondents. However, affirmative action threat was found to be differentially related to general racial feelings at the .001 confidence level. Thus affirmative action threat feelings were not independent from general racial feelings.

Based on the findings of this study, it was recommended that better race relations/equal opportunity education be intensified within the Army. Further, special emphasis should be given to insuring a better understanding of the Army's affirmative action policies.

182. THE FIELD ARTILLERY BATTALION ON THE NUCLEAR BATTLEFIELD, by Major William H. Cook, USA, 91 p.

This research examines the organization of the field artillery battalion, 8-inch, self-propelled, and its effectiveness in a tactical nuclear environment--European theater. The field artillery's requirements for accuracy, command and control, service support, and target acquisition are discussed in detail. To determine the battalion's operational parameters particular emphasis is given to the enemy threat, divisional defensive operations, and the field artillery techniques to support those operations. Further, it is ascertained that dispersion, responsiveness, and austerity of units are of paramount importance on the nuclear battlefield and do impact upon the battalion's organizational effectiveness.

Three possible battalion configurations are examined, weighing the advantages and disadvantages of each. These configurations are, in turn, compared with the current battalion organization. The comparison reveals that the current organization is capable, but inefficient. Additionally, it is found that many personnel and equipment assets are misutilized. Finally, an optimal battalion organization is proposed that eliminates the current inefficiencies without exceeding current manpower and materiel authorizations.

183. THE ATLANTA CAMPAIGN: PRINCIPLE OF THE OBJECTIVE REVISITED, by Major John G. Coombs, USA, 79 p.

The purpose of this study is to analyze Union offensive operations during the Atlanta Campaign of the American Civil War with respect to the principle of the objective. This highly successful campaign split the Confederacy.

Major General William T. Sherman led the Union army to victory over the Confederate army commanded first by Lieutenant General Joseph E. Johnston

and later by Lieutenant General John B. Hood. The conduct of the campaign deep within the South featured herculean logistical achievements as well as brilliant tactics. Timed to coincide with operations in the Eastern theater, Sherman's parochial execution of his mission kept maximum pressure on the Confederacy. At no time could Johnston or Hood reinforce Lee in the Eastern theater, nor could Lee reinforce the Confederate army in the Western theater. The campaign ended on November 12, 1864 when Sherman, having pursued the elusive and highly mobile Confederates into Alabama, withdrew from contact.

The problem in this study was to determine whether Sherman applied the principle of the objective prior to and subsequent to the capture of Atlanta. The primary source used for the study was the War of the Rebellion: A Compilation of the Official Records of the Confederate and Union Armies featuring copies of the original telegraph messages and correspondence. Sherman's private correspondence to his wife and to his brother in the U.S. Senate were also examined.

Among the more important conclusions of the thesis are:

1. The Union commander applied the principle of the objective during the campaign pushing the Confederate forces to a town 20 miles south of Atlanta, and forcing Confederate abandonment of Atlanta.

2. Sherman failed to apply the principle of the objective upon the occupation (capture) of Atlanta.

3. Sherman cautiously protected his railroad lifeline to Tennessee until sufficient forces were allocated to Major General George H. Thomas, his subordinate, who was defending Tennessee. Only after receiving authority from General-in-Chief Ulysses S. Grant did Sherman turn away from Hood. Trusting Thomas to protect Tennessee from Hood's army, Sherman concentrated on his new objective of destroying the southern will to fight. Planned destruction of the South's war making resources began with Sherman's subsequent march to the sea.

184. CHANGSIN (CHOSIN) RESERVOIR, KOREA 1950: A CASE STUDY OF UNITED STATES ARMY TACTICS AND DOCTRINE, by Major Robert M. Coombs, USA, 106 p.

The purpose of this thesis was to determine the adequacy of current U.S. Army doctrine relative to encircled units and breakout operations in view of the problems encountered by the 31st Regimental Combat Team, U.S. 7th Infantry Division, on the eastern side of the Changsin (Chosin) Reservoir in North Korea from 26 November to 2 December 1950.

Tactical doctrine was defined as authoritative guidance published by Headquarters, Department of the Army, pertaining to the employment of U.S. Army units in combat.

The historical and descriptive methods of research were used to ascertain the background, training, and preparation of the 7th Infantry Division prior to entry into combat in Korea; combat experience of the 7th Infantry Division prior to deployment of the 31st Regimental Combat Team to the Changsin Reservoir; and, finally, the period of 26 November to 2 December 1950 during which the 31st Regimental Combat Team was encircled by an estimated two Chinese Communist Divisions and attempted breakout operations which ended in the force ceasing to exist as a military unit.

Analysis of the action determined that the combat action of the 31st Regimental Combat Team provided an excellent example of the problems encountered by a unit which became encircled by the enemy and attempted breakout operations. Also, that the problems encountered by the force are applicable in today's tactical environment.

Current tactical doctrine contained in U.S. Army field manuals was found inadequate. The major problems encountered by the 31st Regimental Combat Team of attrition of combat power due to combat losses, increasing reliance on fire support external to the encirclement, and command actions when communications with external forces were lost, are not included in present doctrine. Conservation of resources available within the encirclement and the necessity for junior leaders to readily assume increased responsibility if their seniors become casualties, are other areas requiring emphasis. Commanders and headquarters senior to the encircled force must aggressively anticipate needs, and render all possible assistance to the encircled force.

The doctrine currently contained in Department of the Army Field Manual 7-20, The Infantry Battalions (1969), pertaining to the conduct of breakout operations was determined to be comprehensive and adequate except as it pertains to evacuation of incapacitated personnel with the breakout force. However, as currently published this doctrine is only applicable to infantry battalions.

The study recommends:

1. Doctrine for encircled forces be published in an Army field manual applicable to all combat, combat support, and combat service support units.

2. Additional doctrinal guidance be provided concerning the conduct of combat operations and supply economy by forces once encircled and prior to commencing breakout and/or relief operations.

3. Specific doctrinal guidance be provided regarding the evacuation of incapacitated personnel with a breakout force when the probability exists that such evacuation will jeopardize the success of the breakout.

4. Other historical examples of encircled forces and breakout operations be reviewed to confirm the validity of the conclusions reached in this study.

185. REACTION OF COMBAT SERVICE SUPPORT TROOPS UNDER STRESS: THE SMALL MAINTENANCE SUPPORT UNIT IN A COMBAT ENVIRONMENT, by Captain John S. Cowings, USA, 128 p.

Reaction of Combat Service Support Troops Under Stress is a study of military organizational behavior within an active combat environment. The study is directed toward the manager assigned to a small maintenance support unit, and strives to acquaint him (or her) with the various psychophysiological reactions apparent in combat service support personnel during periods of combat. These reactions, often erratic in nature, are depicted herein as being environmentally interdependent in that the physical environment acts as a stimulus producing predictable behavioral tendencies.

It is the author's hypothesis that, given the exigency of a combat situation, personnel within a small maintenance support unit will exhibit a definite pattern of organizational behavior. The ROCSSTUS Study provides a graphic illustration of the aforementioned behavior pattern, and incorporates this pattern into an Analytical Model of Organizational Behavior.

It is the author's contention that maintenance unit managers--unlike their counterparts in the combat arms branches of the Army--have little opportunity to formally concern themselves with the subtle nuances of personnel management under combat conditions. Professional development of most maintenance managers has been geared toward production management as opposed to personnel management. Therefore, to entrust the management of maintenance unit personnel, in a combat situation, to the unaided judgment of the maintenance (ordnance) manager is to ask of a combat service support officer (or NCO) that he make decisions within an unfamiliar environment; and, that he make these decisions without the benefit of a yardstick by which he can measure the appropriateness of his judgment.

The Analytical Model of Organizational Behavior developed within this study, provides the necessary yardstick vis-a-vis personnel management decisions, by acting as an aid to the managerial decisionmaking process under stress conditions generated by combat.

As a first lieutenant and company commander, serving with a maintenance forward support company in the Republic of Vietnam, the author experienced the personal trauma of attempting to provide effective personnel management for 145 combat service support troops during 30 days of intensive combat--the 1968 Tet Offensive. This research effort has been undertaken in the sincere hope that some of the lessons learned, and management techniques acquired, will serve to assist maintenance unit managers on some future and as yet undefined battlefield.

186. THE SHORAD REQUIREMENT OF THE ARMORED CAVALRY REGIMENT, by Major William F. Daugherty, USA, 135 p.

The problem addressed in this thesis is to determine the short range air defense (SHORAD) requirement of the armored cavalry regiment (ACR) against low altitude air attack. Based upon an analysis of recent Mideast wars,

unrestricted, modern aerial weaponry has the capability to neutralize the maneuver and effectiveness of the ACR. The large and sophisticated Soviet threat consists of 4,500 high performance aircraft and heliborne forces. COL A. A. Sidorenko's book, The Offensive, provides significant insight into Soviet air attack priorities. In terms of regimental assets, Soviet air attack priorities are: (1) howitzer batteries as nuclear capable weapon systems; (2) tank companies as local reserves; (3) command posts; (4) armored cavalry troops.

As a target, the ACR consists of at least 26 critical assets ranging from small command posts and troop/cavalry/battery-sized units to the large regimental field trains. Before determining the SHORAD requirement, the regiment's organic passive and active air defense measures must be maximized and evaluated. Passive air defense can be the primary air defense for command posts, combat trains, and dispersed armored cavalry troops; they are least effective for helicopter assembly areas, the regimental field trains, and howitzer batteries. The majority of the regiment's huge potential for small arms for air defense (SAFAD) is found in the nine armored cavalry troops. Using the volume fire technique, SAFAD can provide effective final defensive fires capable of destroying Soviet aircraft or degrading their bombing accuracy. In conjunction with passive air defense, SAFAD provides the armored cavalry troop adequate air defense. Redeye, as the organic SHORAD capability of the regiment, complements SAFAD. A full Redeye section can adequately defend one critical asset, with the exception of the regimental field trains.

Using a desert (Fort Bliss) scenario as a vehicle, the regiment's SHORAD shortfall in a corps advance covering force mission is examined. Each asset is analyzed by determining its criticality to the mission, priority for Soviet air attack, ability to avoid detection (passive air defense), SAFAD capability (self-defense), vulnerability to aircraft ordnance, and recuperability. Based upon this analysis, the regimental commander's air defense priorities are: (1) howitzer batteries; (2) tank companies; (3) regimental field trains; (4) regimental and squadron command posts.

After maximizing the regiment's organic passive and active air defense measures, an air defense shortfall remains which requires a minimum of 12 Chaparral/Vulcan (C/V) platoons in view of current air defense doctrine. This requirement equates to a C/V battalion. Further analysis establishes that the SHORAD requirement is best met by the divisional-type C/V battalion which has an airspace control element (ACE), and an optimal mix of two Chaparral/two Vulcan (SP) batteries.

187. THE UNITED STATES ARMY IN THE PHILIPPINE INSURRECTION: 1899-1902, by Major Gerald H. Early, USA, 134 p.

The Philippine Insurrection of 1899-1902 was a case of successful United States elimination of an insurgency that had been developing for almost 25 years. By the time the United States assumed sovereignty over the Philippine Islands following the Spanish-American War of 1898, the objectives of the insurgent movement had changed from reform to independence. Active hostilities against the colonial regime had been going on intermittently for more than two years.

The situation in the Islands at that time had many of the characteristics of recent Asian insurgencies; however, it has been little studied as an aid in the development of today's counterinsurgency principles. Victory against an insurgent movement is far more complex and difficult than simply defeating the enemy by force of arms. The insurgent operates in his homeland and depends for his existence on the support of a sympathetic populace. Because he is generally dedicated to his cause and therefore highly motivated, he usually ceases to fight only when his support is withdrawn and his recruits, food, supplies, and intelligence are denied. The insurgent did cease to fight in the Philippines, and it is useful to find out why and how this occurred.

The United States Army's current approach to counterinsurgency is through internal defense and development campaigns intended to maintain or restore order while concurrently removing those social and economic conditions that contribute to the insurgency and provide the basis of its support. The study evaluates American experience in the Philippine Insurrection in light of these principles. The methods by which the insurgency was suppressed are isolated and analyzed to determine whether or not they support current counterinsurgency policy guidelines. Conversely, the guidelines are applied to the Philippine counterinsurgency effort to determine whether changes in procedures or policies might have resulted in a more rapid or efficient American success.

The study's attention is directed to the United States Army's accomplishment of its missions in the Philippines between 1898 and 1902. As necessary to understand the Philippine revolution, it first discusses the defeat of the Spanish and the occupation of Manila. Then it describes and evaluates the military and civil components of the American counterinsurgency effort that reacted to the two separate phases of the insurgency: the first primarily involving an insurgent regular army, the next guerrilla warfare. The story of these endeavors is found in the official military reports of the period, in the records of hearings conducted by the Congress, and in organizational histories, biographical materials, and a number of scholarly and authoritative previous works on the period.

The United States ultimately suppressed the Philippine Insurrection by using many of the broad internal defense and development concepts that are in present-day Army doctrine. In the first phase of the insurrection, American forces handily defeated the revolutionary army in the field. However, the guerrilla warfare phase required the Americans to introduce civil programs that effectively separated and disaffected the people from the insurgents, while United States Army units defeated the guerrilla bands in hundreds of small engagements.

Successive United States Military Governors in the Philippines developed and implemented the eventual formula for victory. General Wesley Merritt proclaimed the American regime as uninterested in disturbing the Filipinos so long as they did not interfere with American efforts, and willing to permit local self-government. His successor, General Elwell S. Otis, established a model municipal administration in Manila and an enlightened form of government for the remainder of the Islands, while at the same time he defeated the

insurgent regular army in the field. General Arthur MacArthur established American-sponsored civil governments throughout the Islands while effectively prohibiting cooperation between the civilian populace and guerrilla forces in the occupied areas. This led to the defeat of the insurgents in most of the archipelago. The last Military Governor, General Adna R. Chaffee, removed the remaining pockets of rebel resistance by even stricter measures to isolate the revolutionaries, including the resettlement of Filipinos in some areas to physically remove them from insurgent coercion and influence.

The strength of the American effort was in its ability to show the people that its administration was efficient, nonoppressive, and preferable to a revolutionary regime that had often showed itself to be brutal, corrupt, and incapable of maintaining law and order. United States forces were eventually able to provide the security necessary for the villagers to confidentially cooperate in local American-sponsored governments and refuse to support the insurgents. Concurrently, through military strength and skill, the Americans defeated the guerrilla units that could be located and engaged. Contributing to United States success was the fact that by mid-1902 the people were tired of a war which had ravaged the Islands for over six years. They recognized that the United States intended to persist in the pacification effort, and therefore all but the most stubborn became willing to accept American sovereignty as a means of preventing additional strife and dislocation.

The major American weaknesses were the inability to establish a nationwide intelligence network and slowness in the strict application of rules for separating the population from the revolutionary movement. However, language and cultural limitations, as well as the threat of cruel insurgent reprisal, hindered the American ability to develop an effective intelligence network until the United States administration had proved itself through the success of its internal defense and development programs. American domestic political considerations may have prevented the Military Governor from applying the laws of war until after the Presidential election in 1900, in which anti-imperialism was a major campaign issue.

The experience of the United States Army in the Philippine Insurrection of 1899-1902 confirms the validity of today's counterinsurgency doctrine. Every present-day guideline that was thoroughly and carefully implemented by the American administration was successful, while some of the slowness in the pacification effort may have been caused by failure to adequately and promptly adopt others. The insurrection could not have been suppressed exclusively by force of arms--the Americans had to create the conditions under which the basis of insurgent support was removed and the Filipinos became willing to accept United States sovereignty. The United States was fortunate to have had wise and progressive Military Governors in the Philippines who came to grasp the essence of this problem and eliminated the insurgency using policies that are entirely consistent with contemporary counterinsurgency doctrine.

188. THE TANK-ATTACK HELICOPTER IN THE EUROPEAN MID-INTENSITY CONFLICT ENVIRONMENT: AN OPERATIONAL EFFECTIVENESS ANALYSIS OF COMPETITIVENESS/COMPATIBILITY, by Major Curtis V. Ebitz, USA, 106 p.

The problem undertaken in this thesis is to determine whether or not the main battle tank and attack helicopter are competitive or compatible antiarmor weapon systems in a European mid-intensity conflict environment.

Due to the fact that the genesis of the problem is concerned with the quantitative armored superiority of the Warsaw Pact vis a vis NATO, two fundamental hypotheses were conceptualized, stated, and tested.

1. Can the defeat of mass armored forces be independent of force ratios?

and, if so

2. How can the U.S. Army attain a favorable exchange ratio, within existing funding constraints?

In assessing the first hypothesis, the Lanchester square law, which states that success on the battlefield is dependent upon force ratio, was tested against direct empirical plots of historical win-loss results. The findings of this test concluded that quantity is not the sole determinant of success on the battlefield and that other factors can influence the ability of a force to extract a favorable exchange ratio against a numerically superior force. The most significant of these factors, as demonstrated by history and recent experimental studies, is qualitative advantage.

In testing the hypothesis related to the question of how qualitative advantage can be attained, the equation: weapons design (Wd) X tactical employment (Te)=qualitative advantage (QA) was used. In this regard, since the TOW Cobra attack helicopter is held by many to represent the beginning of the end for the main battle tank's antiarmor role, its operational effectiveness was compared and contrasted with the M60A1 main battle tank. This comparative analysis assessed the M60A1 and TOW Cobra in terms of four common measures of effectiveness-mobility, firepower, protection, and survivability. This assessment disclosed the following findings:

1. The TOW Cobra is more responsive on the battlefield due to its superior mobility, whereas, the M60A1 has greater sustainability on the battlefield.

2. The major limitations of the M60A1 are terrain and obstacle clearance, while the major limitations of the TOW Cobra are weather and vulnerability.

3. Relative to firepower, the TOW Cobra has a greater probability of hit when employed at ranges in excess of 1,500 meters. Conversely, the M60A1 has a greater probability of hit when employed at ranges of less than 1,500 meters.

4. Survivability of the TOW Cobra is dependent upon its ability to conduct standoff engagements, whereas the M60A1's inability to conduct standoff engagements is compensated by its armored protection, affording it a greater chance of survival in engagements under fire.

Pertinent to the findings of the operational effectiveness analysis of the M60A1 and TOW Cobra, the following conclusions are drawn relative to the tank-attack helicopter in the European mid-intensity conflict environment.

1. The main battle tank and attack helicopter are not competitive antiarmor weapon systems in that neither system affords a marked advantage over the other.

2. The main battle tank and attack helicopter are highly compatible weapon systems that are best employed using offensive principles where their mobility, firepower, and survivability can be optimized.

3. The bi-dimensional mobility capabilities and overlapping firepower characteristics of the main battle tank and attack helicopter are desirable and enhance the ability to achieve a favorable exchange ratio on the battlefield.

4. The main battle tank, complemented by the attack helicopter, will remain a decisive antiarmor weapons system for the foreseeable future.

189. AN EXAMINATION OF THE COMMAND AND CONTROL COMMUNICATIONS AT BRIGADE, by Captain Gene R. Farmelo, 58 p.

This research examines the communications system of a mechanized infantry brigade. At brigade, the primary means of communications is the tactical FM radio. However, on a modern battlefield there is a clear and present threat to the use of FM radio. The threat stems from electronic warfare techniques which an enemy can employ; and, electromagnetic pulse, a phenomenon associated with nuclear detonations. If a brigade commander loses the use of FM radio, he will be forced to employ an alternative means of communications for command and control communications. Consequently a primary focus of this research was to determine if there are shortcomings in the use of an alternate means of communications and to recommend ways to rectify the shortcomings discovered.

The evaluation of the alternate means of communications at brigade included a detailed review of applicable field manuals to determine what guidance is provided by current tactical communications doctrine. Likewise the brigade's training programs, tests, and exercises were reviewed to determine if the necessary emphasis is being placed on being able to function on a modern battlefield when employing an alternate means of communications. Also reviewed was the military education which is provided the combat arms officers who will be using this system.

Another important facet of this research involved the designing and administering of a test which determines the awareness and preferences of combat officers for an alternate means of communications. The test is explained as well as the results of administering the tests to selected combat arms officers of the CGSC class of 1974-75.

190. AN ANALYSIS OF COST IMPLICATIONS OF ACCOMPLISHING DIRECT SUPPORT MAINTENANCE TASKS FOR THE TRUCK, ¼-TON, M151 SERIES AT THE ORGANIZATIONAL MAINTENANCE LEVEL, by Major Donald C. Fischer, USA, 119 p.

The general problem studied was the feasibility of moving direct support maintenance responsibilities forward to the organizational maintenance level. The current concept relies on centralization of skills and capital equipment such as tools and test equipment. This is a viable concept when the price of facilities is high relative to labor. In recent years, however, labor has become an extremely high priced commodity and using people in such tasks as driving to maintenance units frequently to deliver and pick up equipment is inefficient. Thus, when equipment is high priced, complex, cumbersome, and requires highly specialized skills such as a certain missile system support equipment, a central maintenance facility is economical. If, however, tools are cheap versus the cost of people, then perhaps the tools should be proliferated to increase the productivity of people.

Flexibility, then, is required in the study of the problem of providing direct support. This study proposes that allocation of maintenance responsibilities should be based on the particular equipment being supported as opposed to applying one concept to all commodities. This study develops a methodology for analysis of individual items of automotive materiel. The vehicle for analysis is the M151A1 ¼-ton truck. The intent of the model and methodology is to permit analysis of more complex automotive items in order to obtain a more optimum allocation of maintenance responsibility.

Two research questions were examined:

1. What are tool and equipment costs incurred by moving responsibility for replacement of engines, transmissions/transfer assemblies, clutches, and steering gear assemblies forward to the using organization for the M151A1 ¼-ton truck?

2. What are the costs associated with providing additional skills at the organizational level to permit replacement of engines, transmissions/transfer assemblies, clutches, and steering gear assemblies?

The research hypothesis examined was:

If responsibility for replacement of engines, transmission/transfer assemblies, clutches, and steering gear assemblies was shifted from direct support to organizational maintenance level, there would be a significant reduction in direct support maintenance costs.

The maintenance allocation chart for the M151 series of trucks was reviewed to determine what component replacement was a direct support responsibility. The engine, transmission/transfer assembly, clutch, steering gear, and oil pump must be placed by the direct support unit. Oil pump replacement was not examined since the data base for the study showed that for 108 vehicles operated over 5,000,000 miles, no oil pump replacements were recorded.

Tool Costs. Tool costs were estimated by reviewing the direct and general support maintenance manual to determine what tools are required to replace the above components. The organizational maintenance shop set (No. 2 Common) was used to determine if those tools are on hand at organizational level. The Army Master Data File was used to determine the price of tools that would have to be provided if major component replacement responsibility for the M151 was given to the organizational level.

Training Costs. The programs of instruction for MOS 63H20, Automotive Repairman (direct and general support) and MOS 63C20, Tracked Vehicle Mechanic (organizational) were compared to determine what field maintenance training would have to be given organizational mechanics to permit them to replace M151 series major components.

Variable Costs. A computer simulation was used to simulate direct support maintenance requirements generated by ¼-ton trucks organic to a mechanized infantry battalion. Models for direct and indirect costs were developed to describe the current maintenance concept where vehicles are taken to the direct support unit for repair and the proposed concept where component replacement would be done at and by the organizational level.

Current concept model:

ATOTCST = (OGPRPTM + TRANSTM + DSMNTM)*6.48 + APOLCST

where

ATOTCST = Total maintenance costs generated by the current concept (Concept A)
OGPRPTM = Time required to prepare a vehicle for acceptance by the direct support unit
TRANSTM = Time required to transport the disabled vehicle to and from the direct support unit
DSMNTM = Time required to replace the component
6.48 = Hourly labor rate (USAREUR, 1974)

Proposed concept model:

BTOTCST = DSMNTM*6.48

where OGPRPTM and TRANSTM are assumed to be zero due to repairs being accomplished by the owning unit.

Tools. Tools required by the organization consisted of the engine/transmission removal sling. An optional item would be the automotive hoist. Estimated costs are $150-$300 per battalion.

Training: Additional training would be 35 hours at a cost of approximately $191 per student (MOS 63C20). For a mechanized infantry battalion currently authorized 7 such mechanics, the cost would be approximately $1,337.

Variable Costs. The computer simulation and the statistical test showed that cost savings under the proposed concept were statistically significant.

Comparison of these savings to tool and training costs showed that the additional investment would have a high payoff, especially in situations where there was a large distance between the user and the support unit or where conditions increased normal maintenance requirements.

191. PRODUCTION CONTROL FOR A C&C COMPANY, by Major Henry H. Fitzpatrick, USA, 97 p.

Materiel reclamation and salvage operations are vital functions that can substantially reduce logistical costs. Although these functions have a high economic impact, the Army has produced minimal doctrinal guidance on how to internally manage and control materiel processing operations of this nature. The TOE unit most affected by this absence of doctrinal guidance is the Collection and Classification (C&C) Company which must perform its assigned mission without adequate guidelines to control its production activities. For a materiel processing operation, or any other production oriented operation, production control enhances the planning, scheduling, dispatching, and follow-up functions that must be performed.

This study proposes a type production control system for use by a C&C Company to manage its materiel processing operation. The proposed system utilizes such standard Army production control tools as the production control board and tub file, modified and realigned to fit the mission requirements of a C&C company. Accountability of all items processed by the company is provided by the proposed system's emphasis on the use of stock record cards to account for each item received by the company as well as each repair part and component that is recovered for return to the supply system.

To obtain data for this study, questionnaires were sent to the three Active Army C&C companies and to personnel knowledgeable in C&C Company operations The field input information revealed the need for a production control system specifically oriented to the C&C company's operations, a system that provided visual means of controlling work flow, and a system that accommodated the accountability of all items received and processed by the company. The responses to the questionnaires provided information on procedures used by field units and formed a basis of comparison, analysis, and evaluation of the proposed system.

Viability of the proposed system is proven through the system's provision of a visual means to assist in accomplishing the production control functions--planning, scheduling, dispatching, and follow-up--its facilitation of the accountability requirements, and thus, is recommended for use in effectively controlling a C&C company's materiel processing operation.

192. U.S. ARMY CODE OF CONDUCT TRAINING: LET THE POWs TELL THEIR STORIES, by Major Geoffrey S. Moakley, USA, 214 p.

The U.S. Army must improve its Code of Conduct training methods. While the code is really a flexible guide to govern POW behavior, the Army teaches the code as if it were an inflexible guide which contains all that the soldier needs to know to survive as a POW.

This paper examines the origins and meaning of the Code of Conduct, as well as current Army training procedures, which basically consist of rote memorization of the idealistic phrases and articles of the code. It also examines the experiences of POWs in the Korean and Southeast Asian Wars, and the U-2, RB-47, and Pueblo incidents.

This paper concludes that the Army must supplement its idealistic portrayal of the Code of Conduct with the readily available experiences of how former POWs actually implemented the code. More importantly, Code of Conduct instruction must include practical instruction in combating the pressures of interrogation, isolation, depression, suicide, malnutrition, and primitive medicine. This instruction must explain how former POWs overcame the problems associated with escape, torture, resistance, propaganda, communication, and camp organization.

193. THE JOINT AIR LAND BATTLE SYSTEM: AN ALTERNATIVE TO THE AIR GROUND OPERATIONS SYSTEM, by Major James R. Nichols, USAF, 89 p.

The 1973 Middle East War demonstrated the lethality of modern warfare and the need to integrate combined arms doctrine into the United States Army and Air Force. The Air Ground Operations System of the U.S. Army and Air Force integrates tactical airpower into the ground battle. The AGOS system must be capable of supporting the principles of war in a modern air/land battle. This study attempts to determine if the AGOS system or a new system, the Joint Air Land Battle System (JALBS), is the best concept against Soviet-equipped and doctrine-oriented forces.

The two systems are investigated using the tactical air functions of close air support, interdiction, and counter-air to determine which system provides the best tactical air support to ground forces. The study concludes that the JALBS concept provides better tactical air support than the AGOS system. The conclusion is based on a comparison of each system's ability to apply the principles of war in a modern air/land battle, a war game using the two systems, and an evolution of each system's capability to support time and space momentum.

194. TOWARD A DYNAMIC RELATIVE COMBAT POWER ESTIMATOR FOR TACTICIANS, by Major Harry W. Nieuwboer, USA, 183 p.

Economic and political trends over the last several years have combined to make available combat power a truly scarce resource in this nation, perhaps for the first time since World War II. The trend toward increasing resource constraints can be expected to continue, and to result in an increasing need for precise allocation of combat power. The U.S. Army currently has no quantitative tool to assist the tactician in estimating combat power needs.

This study develops and tests a relative combat power estimator based on models and methodologies currently in use in the combat developments community. The estimator shows validity when tested against historical cases, sensitivity to most combat multipliers, and feasibility for useful refinement and extension.

195. PERCEPTIONS OF FIGHTER STRIKES: AN INVESTIGATION INTO ARMY AND AIR FORCE OFFICERS' CONCEPTS OF CLOSE AIR SUPPORT, AIR INTERDICTION, AND TACTICAL AIR CONTROL, by Major Howard Gary Nophsker, USAF, 141 p.

It is intuitively obvious that, due to differences in background and training, Army and Air Force officers view the concepts of close air support, air interdiction, and tactical air control differently. However, the degree of agreement, disagreement, understanding, or misunderstanding of fighter strike concepts has never been ascertained. This thesis lays the foundation for examining those factors.

The initial portion of the thesis analyzes various Army and Air Force publications to determine if inconsistencies are prevalent in doctrinal definitions and concepts. Several inconsistencies are found which, it is assumed, have a direct bearing upon any lack of agreement and understanding between Army and Air Force officers.

The major portion of the thesis addresses perceptions held by Army and Air Force officers. Three hypotheses are advanced: (1) Fighter strike concepts are misunderstood by a high percentage of U.S. Army and U.S. Air Force officers, (2) U.S. Army and U.S. Air Force officers have significantly different opinions, attitudes, and knowledge concerning fighter strike concepts, and (3) Additional training in fighter strike concepts would be beneficial to both Services.

A survey was conducted to test the three hypotheses. Questionnaires were distributed to 110 Army officers at Fort Leavenworth, Kansas, and to a similar number of Air Force officers at Maxwell Air Force Base, Alabama. Analysis of the resulting data indicated that all three hypotheses were valid.

The author's recommendations for improvement include specific changes to existing doctrinal publications, additional training of Army and Air Force officers in the aforementioned concepts, and continued use and refinement of the survey questionnaire. In addition, several recommendations are presented for continued research in the subject of fighter strike perceptions.

196. DETERMINING THE NEED FOR AN ARMY LIAISON STAFF TO CONGRESS FOR STRATEGIC MATTERS, by Captain Dennis M. Patrick, USA, 113 p.

This paper investigates the need for an Army liaison staff to Congress for strategic matters. The historical and descriptive approaches are used to evaluate pertinent documentary evidence. The Congressional process, as it pertains to military policy, is illustrated with two different models.

In recent years Congress has displayed a strong desire to curb the powers of the President and to reassert Congressional prerogatives. However, in attempting to reassert control, Congress may be ignoring the greater impact of its actions upon military strategy. Without close coordination and cooperation between Congress and the Administration on development of military policy, the strategic effort can be degraded.

It is evident from the history of the Army legislative liaison effort that liaison between the Army and Congress has developed in response to a need for better communication between the two bodies. The determination of many members of Congress to reassert Congressional prerogatives, particularly in the area of the war powers, has underscored the need to once again improve communications. A good professional understanding between the Army and Congress is needed to implement wise legislation.

Although strategy is developed and implemented within the executive branch, Congress controls the structural means for carrying any strategy into effect. The Office of the Chief of Legislative Liaison has been very effective in dealing with the structural factors needed to carry out Army decisions on strategic matters. However, there appears to be a need to increase the emphasis upon providing Congress with a clear and consistent rationale for strategic programs as they pertain to the Army.

The conclusion of this study indicates that an Army liaison staff to Congress for strategic matters should be established. This could be accomplished in several ways. This study recommends that initial consideration be given to expanding the current legislative liaison organization to include a division responsible for routinely appraising Congress on matters of strategic significance to the Army.

197. A COMPARISON BETWEEN OPERATIONAL CHARACTERISTICS AND MISSION ACCOMPLISHMENT OF RECRUITING AREA COMMANDERS, by Major Edward J. Pozniak, USA, 264 p.

The problem of obtaining the required manpower for the U.S. Army without a draft, precipitated numerous changes in the U.S. Army Recruiting Command. Among these changes was the introduction, in mid-fiscal year 1974, of Captains as Recruiting Area Commanders. (The Recruiting Area is one of the lower levels of the recruiting organization and until that time had been commanded by a Master Sergeant.)

The study attempts to determine if there exists a relationship between how the Area Commander operates and the Recruiting Area's production of the requisite quantity and quality enlistments. 141 Area Commanders' responses to an operational questionnaire were compared with the mission accomplishment of the Areas over the period of September through December 1975.

Analysis reveals that the majority of Recruiting Area Commanders operate in the same general manner, regardless of their production record. Further investigation, however, reveals that there are certain definite items which tend to distinguish the "successful" commander from his less successful counterparts. Among the areas in which differences were noted are the time he devotes to certain functions, the relative degree of importance he attaches to these functions, the work load distribution in the Recruiting Area, and how much freedom of action he is permitted.

198. A CASE STUDY OF THE COMBINED ARMS COMBAT DEVELOPMENTS ACTIVITY COST CONSIDERATION IN DECISIONMAKING REGARDING COMBAT DEVELOPMENTS STUDIES, by LTC Ransford A. Reinhard, USA, 83 p.

This thesis addresses the problem of whether cost-benefit analysis would assist the manager in decisionmaking regarding combat developments studies within the Combined Arms Combat Developments Activity (CACDA) and develops a basis for improved decisionmaking techniques.

The case study determined that CACDA is a professional and competent organization capable of developing recommendations, alternatives, or solutions to many critical problems facing the Army; however, this capability has been degraded because CACDA has been tasked to undertake more combat developments studies than it has the capability to conduct. As a result of this excessive work load, significant delays in the planned completion of studies were experienced, and the desired validation of other studies may not have been possible. This situation resulted because the present system and management tools do not provide sufficient criteria for identifying the more critical studies and reducing the scope or eliminating the others.

The study concludes that: (1) CACDA managers need an analytical tool to assist them in decisionmaking and developing recommendations to higher headquarters regarding whether a study should be conducted as proposed, (2) managers consider costs in decisionmaking although costs are not as significant as other considerations, (3) managers can assign a relative value to a study proposal, (4) a form of cost-benefit analysis would provide a valuable analytical tool to assist the managers in developing recommendations pertaining to a study proposal.

199. AN ANALYSIS OF COMBAT SERVICE SUPPORT DOCTRINE FOR THE MECHANIZED INFANTRY DIVISION DURING WIDE FRONTAGE OPERATIONS, by LTC Robert Bruce Rhynsburger, USA, 59 p.

A comparison of Soviet and U.S. forces in the NATO Center Region has necessitated the development of new tactical doctrine and training techniques to counter the numerical superiority of the Red forces and the wide frontages occupied by U.S. divisions. Experience has shown that logistics doctrine must compliment and support the tactical concepts to successfully accomplish the combat mission.

This thesis attempts to determine if the existing doctrine is sufficient for the mechanized infantry division support command commander to establish responsive logistic support during wide frontage defensive operations.

The investigation is focused on an analysis of historical data, current published doctrine and an area of operations model. The dimensions used in the model are similar to those used in the scenario oriented recurring evaluation system model of Europe (SCORES).

Analysis indicates that a wide frontage operation will excessively strain the capability of the division support command using current doctrine. Existing logistics doctrine designed for conventional defensive tactics must be amended for a wide frontage defense situation.

200. CRITIQUE OF THE CAPABILITIES OF THE FIELD ARTILLERY BATTALION (8", SP) TO ACCOMPLISH ITS NUCLEAR MISSION, by Major John E. Robbins, USA, 62 p.

This research examined the capabilities of the field artillery battalion (8", SP) to accomplish its nuclear mission. A typical European scenario is used as a vehicle for analysis of the present battalion organization and two alternate battalion organizations. This scenario envisions a massive attack by an aggressor force in an area defended by a U.S. division. Twenty-six hours after the attack begins, nuclear release is received for the division sub-package with a sixty minute pulse beginning four hours later.

The three battalion organizations are analyzed for their ability to survey, compute the firing data, communicate, transport, assemble and fire the nuclear weapons. Only one of the battalion organizations is found to be adequate; however, it does not make the most efficient use of men and materiel. Neither of the other two battalion organizations can perform the complete nuclear mission.

Utilizing a combination of the present organization and the organization which can accomplish its nuclear mission, an optimal organization is proposed. This organization retains the sub-elements in the present organization that can adequately perform their tasks related to the nuclear mission and modifies the sub-elements that are found to be inadequate. The resulting battalion organization has one less individual, the same number of vehicles, and a few additional items of equipment.

201. SHOULD WE HAVE BOTH A G-2 AND G-3?, by Major Allen F. Rossow, USA, 77 p.

Currently the U.S. Army is intensely appraising its doctrine and methods in view of perceived future wars. The relationship existing between the division G-2 and G-3 has not been examined. Historically in peacetime the role of the G-2 and related intelligence resources have been drastically reduced. This capability then had to be redeveloped on a crises basis with less than full effectiveness to join tactical forces in the conflict.

The study first examines the history and basis for the coordinating staff principals. Through interviews, current relationships in foreign and U.S. Army staffs and the functional responsibilities of the G-2 and G-3 are examined. Interviews then provide an examination of divisions today and how resources are allocated between the intelligence and operations fields/staffs.

The study concludes that a primacy does exist with the operations officer and that resources, specifically personnel, are again being reduced in the intelligence field. History provides a prediction of the impact of this course of action for the next conflict. These reductions in the past have

degraded the expertise of the tactical intelligence community to the detriment of the force as a whole. The future war now envisioned precludes the time required for mobilization, training, and fielding these crucial assets. Recommendations are included to reverse this pattern and to provide an intelligence capability that will enable the commander to "see and win the first battle."

202. THE WIRED GARRISON DESIGN CONCEPT APPLIED TO FORT LEAVENWORTH, KANSAS, by Captain Karl D. Sakas, USA, 104 p.

The Wired Garrison Communications-Electronics Design Concept incorporates technological advances to best serve Army installation communication needs. The Fort Leavenworth user needs have increased during the past few years. The Army has not applied the Wired Garrison Concept to Fort Leavenworth.

This study seeks to determine if the Army could apply the Wired Garrison Concept to Fort Leavenworth to meet the short-term projected communications requirements.

Investigation reveals that the Wired Garrison Communications-Electronics Design Concept can be applied to Fort Leavenworth, Kansas. The Wired Garrison is suitable to support the United States Army Combined Arms Combat Developments Activity. This concept is particularly applicable to the needs of the United States Army Command and General Staff College.

203. THE DYNAMICS OF ARMY WRITING, by Major Jon C. Schreyach, USA, 104 p.

This thesis replicates and expands upon previous scholarship. The replication consists of reporting the results of a survey of CGSC student writers which was analyzed in terms of total population and ability sub-groups as established by a diagnostic examination of writing ability. These results are then compared to results from a similar survey of the 1974-75 CGSC class which was analyzed without the aid of a diagnostic test.

The expansion portion of the paper extends the scope of research from the writer level to that of the supervisor. Students at the Army War College were surveyed to determine their perceptions of the pressures at work in Army writing situations. These perceptions are compared to the current CGSC class in order to determine points of commonality and, more important, areas of disagreement.

The study establishes that, although the previous CGSC work is valid when total population is considered, important variations exist within the ability sub-groups. Further, the study establishes that there are significant differences of opinion between War College and CGSC students concerning the dynamics of Army writing.

204. RESPONSIBILITY: AS ATTRIBUTED BY U.S. ARMY OFFICERS, by Major Francis J. Sisti, USA, 105 p.

The cognitive process of attribution of responsibility (AR) was empirically studied to establish baseline AR data within the U.S. Army. In the experiment, two sections of 41, middle-grade, U.S. Army officers (Captains, Majors, and Lieutenant Colonels), attending the USACGSC were administered one of two AR questionnaires. The two questionnaires were constructed using 4 stories (2 with positive and 2 with negative outcomes) with five variations of each to represent the 5 levels of AR. One questionnaire was made up of purely military settings and the other was made up of purely civilian settings. Following past AR research, the stories included the minimum components necessary to elicit AR at each of the 5 levels. Story content was relevant to middle-grade military officers.

AR varied significantly with Levels, Outcomes, Groups X Levels, Groups X Outcomes, and Outcomes X Levels ($p \leq .005$ or higher). The study supported past empirical tests of Heider's theoretical AR curve; based on the impact of environmental factors. However, the results very strongly supported the hypothesized decrement of AR at the "Justified" Level. This finding poses a higher level of AR maturity/sophistication in the present S population than populations used in past AR research. The study further revealed a dualistic view of AR held by U.S. Army officers when presented with like situations in purely military and civilian settings.

205. CAVALRY OPERATIONS AND THEIR EFFECTS ON THE CHANCELLORSVILLE CAMPAIGN, by Major Charles R. Smith, Jr., USMC, 125 p.

The purpose of this study is to establish the effects of cavalry operations, both Federal and Confederate, on the battles which occurred during the Chancellorsville Campaign. The primary source used for the study was the War of the Rebellion: A Compilation of the Official Records of the Confederate and Union Armies.

The Chancellorsville Campaign, fought by the Army of the Potomac and the Army of Northern Virginia, during the spring of 1863, was a major Federal offensive. Its purpose was to destroy the Army of Northern Virginia and to force it to retreat from Fredericksburg, Virginia. The campaign involved nearly 200,000 soldiers of both sides and produced over 30,000 casualties.

Ultimately, the Army of the Potomac, commanded by Major General Joseph Hooker was defeated by General Robert E. Lee's Army of Northern Virginia and as a result abandoned its offensive and retreated to its previous position north of the Rappahannock River. The Federal Army possessed a large numerical advantage and though initially on the offensive it was forced to retreat by a smaller army.

In analyzing the campaign, several factors emerge which help to explain Lee's victory and Hooker's defeat. One of these factors is the way in which each commander utilized his cavalry assets. The hypothesis to be tested in the study is that Lee's employment of cavalry forces contributed to his victory, while Hooker's use of cavalry was a significant factor in producing his defeat.

Among the major conclusions of the study are:

1. Federal cavalry operations produced no beneficial effects for the Army of the Potomac.

2. The failure of Federal cavalry to produce significant results at Chancellorsville was due to the methods used by General Hooker to employ his cavalry resources.

3. The Federal defeat at Chancellorsville was due, in part, to the lack of adequate cavalry support on the main battlefield.

4. Confederate cavalry was properly employed at Chancellorsville.

5. The effectiveness of Confederate cavalry operations contributed significantly to Lee's victory.

The study is concluded with a review of the lessons regarding cavalry employment provided by the Chancellorsville Campaign and with some general thoughts on the use of cavalry forces on the modern battlefield.

206. GROUND SURVEILLANCE IN DEPTH: A REAPPRAISAL OF PRACTICE AND DOCTRINE, by Major Roger Stewart Talmadge, USA, 107 p.

Given the nature of the international environment and the proliferation of communist-inspired and other insurgency movements, one cannot preclude United States involvement in stability operations in an insurgency environment. It is, consequently, incumbent on the military commander to fully understand the nature of such operations. In a situation in which his forces are usually isolated, the loyalty of the surrounding indigenous population is indeterminable, and friendly units are frequently overextended in zone, the need for timely and accurate intelligence is vital. Operating base and logistic installation defense are of particular concern in an insurgency environment since friendly forces are most highly vulnerable to harassing artillery, mortar and rocket fire, espionage, sabotage and intermittent surprise ground attack.

This paper investigates whether current United States Army combat surveillance doctrine available to the maneuver battalion responsible for base security in stability operations is valid. Applicatory and doctrinal aspects of combat surveillance are investigated using the historical research approach. The investigation concludes that current doctrine is invalid.

The study provides the necessary introspection upon which a proposed battalion ground surveillance plan can be constructed. The proposed plan is intended to rectify the inadequacies discovered in current combat surveillance doctrine for use in stability operations.

207. SOME CAUSES OF CONFLICTING QUALITY AND PERFORMANCE STANDARDS OF U.S. ARMY ENLISTEES 1973-1975, by Major Robert H. Upchurch, USA, 154 p.

This study investigates causes of the so-called "Quality Enlistee Controversy" to determine why United States Army Recruiting Command (USAREC) data predicting quality of and success for enlistees in the All-Volunteer Army (AVA) seems to be contradicted by the judgements of Training Center Cadre and using-unit officers and by significantly high early-discharge rates.

The study found (1) that enlistee attitudes and capacity for motivation are important determinants for their success in the AVA, (2) that USAREC uses no diagnostic tests to determine applicant attitude or capacity for motivation, (3) that a high school diploma graduate (HSDG) has a significantly greater potential for success in the AVA than does someone who has not actually earned a high school diploma, (4) that those high school graduates with a General Education Development (GED) equivalency have a significantly greater potential for failure in the AVA than do HSDG's, (5) that USAREC classifies HSDG's and GED's under a common categorical designator--high school graduate (HSG), (6) that regulations and missions provide various echelons of the army with different preceptions, criteria, and standards for defining a "quality enlistee/soldier," (7) that recruiters turn to recruiting more GED's during the months of February through May when fewer HSDG's are available for enlistment, (8) that the Trainee Discharge Program has been effective in eliminating substandard trainees prior to their assignment to regular army units, and (9) that the mental category system has been effective as a basis for determining the trainability and success of AVA enlistees.

The study concludes that causes of the "Quality Enlistee Controversy" include (1) a lack of diagnostic testing to determine applicant attitude and capacity for motivation which now denies USAREC an objective basis for predicting success of enlistees, (2) USAREC's combined HSG classification of HSDG's and GED's which now results in misleading expectations, (3) USAREC, trainers, and users are applying "quality" to different factors and that these factors in part account for what are mainly semantic differences among army echelons concerning "quality enlistees/soldiers," and (4) a pressure on recruiters to recruit a pre-determined high school graduate percentage which now results in a larger influx of GED's during February through May.

208. JOHN BASIL TURCHIN: A RUSSIAN VIEWS THE AMERICAN CIVIL WAR, by Major John A. Van Alstyne, USA, 95 p.

John Basil Turchin, a colonel in the Russian Army of Czar Nicholas I, immigrated to the United States and served in the Union Army from May 1861 until July 1864. Initially, he was appointed commander of the 19th Illinois Infantry Regiment, and subsequently given command of the 8th Brigade, Army of the Ohio.

Turchin believed the Union should be more vigorous in carrying the war to the Confederacy. His methods in this regard eventually led to controversy with superiors and ultimately to his court-martial.

Following his court-martial conviction, he was pardoned by President Lincoln, promoted to brigadier general, and given command of a brigade in the Army of the Cumberland. There, he served with distinction until July 1864 when he became ill and resigned his commission.

Later, Turchin was co-founder of a successful Polish colony at Radom, Illinois. In 1888, he published his major work, Chickamauga, in which he discussed the battle in detail. Much of this work, however, was a general criticism of the Union's prosecution of the war and specific criticism of key Union commanders.

General Turchin was an experienced and successful commander who understood the nature of war and was one of the earliest advocates of the total war concept for which Generals William T. Sherman and Phillip H. Sheridan later became famous.

209. THE UTILITY TACTICAL TRANSPORT AIRCRAFT SYSTEM (UTTAS)-A CRITICAL LOOK AT ITS REPAIRABILITY, by LTC Jerry R. Varnon, USA, 76 p.

It is the author's contention that procurement of the UTTAS as designed in prototype models will require changes in the existing aircraft maintenance system to insure repairability at DS level. The structural design was critically studied to assess the capability of the Army's aircraft maintenance system to repair the UTTAS if damaged in combat. The airframe was the focus of the paper. Analogies are also drawn between the complexity of the UTTAS and the CH-47 and CH-54 helicopters.

Historical examples point out the shortcomings associated with some of the helicopter designs deployed in Vietnam. The same major problem areas that caused long term grounding periods for the UH-1H are displayed in an even more maintenance significant array on the UTTAS. It is almost impossible to hit the UTTAS and miss a vital component, system element, or primary structure member. When combat damage occurs, with current standards of serviceability, the only answer is ground it and repair it.

Technical Manuals should be published in two volumes, one for peace and one for war, to minimize confusion and misinterpretations. The current technological state-of-the-art should be sufficient to develop standards for combat damage repair that recognizes a trade-off between operational readiness with a moderate risk and current repair criteria.

The shortage of hard-skilled MOS 68 personnel in Vietnam revealed that the Army was incapable of supporting its aircraft without civilian contract maintenance personnel. The availability, deployability, and use of civilians in a mid-intensity war is seriously questionable. The author proposes a new philosophy for institutional and unit training so as to form a large pool of trained MOS 68 personnel.

Aircraft maintenance doctrine, policy, concepts, and procedures were traced historically through the past two decades to show its evolution to its current organization. It is the author's contention that the new three level aircraft maintenance system that evolved from Vietnam experience is incapable of supporting the UTTAS in Europe.

The study concludes that the UTTAS may require too much of an investment in additional repairmen, special tools, system test sets, shop stock/PLL/ASL items, and transportation means. Consideration should be given to retention of the UH-1H with an upgraded engine (1800 shp) and transmission. A compromise between the UH-1H and UTTAS would be the simple Bell Model 214.

210. SOCIAL PSYCHOLOGICAL EXCHANGE OF INTERPERSONAL POWER AND OBLIGATION BETWEEN U.S. ARMY INFANTRY SUPERORDINATES AND SUBORDINATES, by Major Gerald L. Weigand, USA, 128 p.

An exhaustive review of over 200 academic and military sources indicates that decentralized authority and responsibility to competent subordinates improves the upward flow of communications within an organization, thereby contributing to organizational effectiveness. This can be viewed as an interpersonal exchange of power and obligation between leader and follower. The tendency toward such exchange can be identified as adaptive leadership and followership styles.

This study permitted examination of preferred leadership and followership styles at various levels of experience and seniority within the Army. Eleven hundred and seven infantry noncommissioned officers, officer candidates, and commissioned officers attending six professional development courses were tested using instruments derived from Sweney's Response to Power Model (RPM).

Investigation revealed that leadership style preferences improve with level among officer personnel, but do not improve with level among noncommissioned officers. Changes were particularly noteworthy between officers attending the Infantry Officer Advanced Course and officers attending the Command and General Staff College. This may indicate a positive and operational selection process based upon favorable officer efficiency reports which stem from superior organization effectiveness which in turn can be attributed at least in part to leadership and followership style. Findings also provided inferential support to Sweney's Response to Power Model. Additional findings relating preferred leadership and followership style to source of commission, component, age, years of education, months of command, and months of staff as appropriate are reported.

211. RISK PREFERENCE AMONG US ARMY OFFICERS, by Major John E. Yox, USA, 69 p.

Because of the dangers of combat that Army officers potentially face, it was hypothesized that they should become sensitized to risk taking, and that this could be observed by their being less risk averse than civilians. This study sampled two groups of male Army officers: lieutenants and officers attending the Command and General Staff College. An adapted version of the Choice Dilemmas Questionnaire (Kogan & Wallach, 1964) was used to measure

risk. Mean risk scores of the two study groups were compared with those of a civilian sample reported in the literature. The principal finding was that the lieutenants were less risk averse than the civilians, but the older officers were more risk averse.

Several findings were significant for combined military samples. Risk aversion varied directly with age. Sources of commission interacted with age and marital status. The effect of age on risk was neutralized in all commission groups except ROTC. Marital status had no effect on risk for ROTC, USMA, and OCS commissionees, but unmarried officers with other commission sources were more risk prone than the married ones. Officers who had received secondary zone promotions were more favorably disposed toward risk than those who had not. Married 22- and 23-year-old officers were more risk prone than unmarried officers of that age range.

212. ATTITUDES TOWARD FEAR OF DEATH AND DYING AMONG ARMY OFFICERS, by LTC Clara L. Adams, USA, 97 p.

The attitudes toward fear of death and dying among Army officers are of military importance because of their potential influence upon abilities to cope with the responsibilities of leadership. Previous studies have indicated that fears of dying are realities for soldiers, and that they are managed in a variety of ways in combat situations. Further, it is probable that officers may have different fears and coping methods depending upon an infinite number of influencing factors.

This study sought to determine if there were differences in the expressed attitudes of Army aviators and combat officers. It was hypothesized that aviators would express less fear of death and dying than the combat officers, and that the rationale for the difference was a difference of training.

Investigation revealed that there was a tendency for aviators to express less fear of death and dying than combat officers. However, the speculation that differences were based on training was not supported. It was found that there are other factors such as age, experience, religion, and education which may influence fears and fear management. Analysis of the data raised many questions that were beyond the scope of this study. However, the questions emphasize the urgent need for further research of the topic.

213. THE FEDERAL GOVERNMENT AND THE CREEK INDIANS, 1775-1813, Major Frank H. Akers, Jr., USA, 100 p.

One of the immediate problems facing the United States in 1775 was that of relations with the Indian tribes of North America. Study of the transactions between the federal government and the Creek Indians from 1775-1813 offers many insights into the development of a national Indian policy. The period encompassed by this study includes U.S.-Creek interaction from its birth until the outbreak of general hostilities between the two nations.

Creek-American affairs during this time were characterized by continued white encroachment upon Indian lands, haphazard negotiations, and an identity crisis on the part of the Creeks as they became more dependent upon the white man. Meanwhile, the United States, burdened with the task of establishing a stable government, struggled to develop coherent and consistent policy for dealing with the Indians within its borders. Frequently, Indian matters received less attention than more visible issues.

Research materials concerning the topic of federal-Creek relations are abundant but scattered. State archives throughout the South remain a primary repository for much information on the subject. Federal records are available at the National Archives and the Library of Congress; however, a large number of these holdings are available on microfilm. Numerous secondary works touch upon portions of the subject area. but most are based upon a similar series of diaries, journals, and accounts.

The conclusions reached in this study indicate that the United States lacked the means and the will to allocate resources in proportion to the magnitude of the Indian problem it faced. The policies followed by the government, however, were consistent with the desires of the majority of its citizens and played a major role in reducing conflict on the frontier.

214. THE DEVELOPMENT OF AMERICAN TANK DESTROYERS DURING WORLD WAR II: THE IMPACT OF DOCTRINE, COMBAT EXPERIENCE, AND TECHNOLOGY ON MATERIEL ACQUISITION, by Captain Charles M. Baily, USA, 136 p.

The success of Germany's armored formations during the early years of World War II forced the U.S. Army to reexamine the problem of antitank warfare. The result of that reexamination was a uniquely American solution--the tank destroyers.

Primarily the brainchild of General Lesley J. McNair, the doctrine of tank destroyers was based on the concept of mobile antitank guns, organized in battalions, which could move and mass as necessary to defeat enemy tanks. By early 1942, the U.S. Army had developed organizations and detailed doctrine to implement General McNair's concepts. However, an intrinsic problem, developing equipment for the units, had yet to be solved.

This study focuses on the development of guns and gun motor carriages for the tank destroyers. The Tank Destroyer Center used a twofold approach to solve its equipment problems: first, adapt what was immediately available as expedient equipment, and, second, begin development of an ideal tank destroyer designed to fit their doctrine. Circumstances forced the U.S. Army to thrust its tank destroyers into combat before the ideal tank destroyer was available.

The tank destroyers in combat theaters were never employed according to their doctrine. Misemployment and the limitations of expedient equipment created dissatisfaction among overseas commanders concerning tank destroyers. Pressure from overseas effected doctrine, organization, and development efforts in the United States. The U.S. Army forced the Tank Destroyer Center to adopt and develop weapons unsuitable, in the latter's view, for tank destroyer doctrine--towed guns.

A technological threat from heavy German tanks caused development efforts in the United States to incorporate bigger guns. The U.S. Army's failure to properly assess the magnitude of the threat resulted in a scarcity of adequate antitank weapons in Northwest Europe. When the ideal tank destroyer, the M-18 "Hellcat," finally reached Europe; it proved to be undergunned.

The study concludes that the development of equipment is not strictly a technological process. Doctrine and combat experience alter the path of development. Personalities and the pressure of war accentuate different views and also effect development. Technology dictates the speed of creating new equipment demanded by doctrine and combat experience.

215. STRATEGIC IMPLICATIONS OF MOSCOW'S INITIATIVE FOR COLLECTIVE SECURITY IN ASIA, by Major Alfred Biegel, USA, 204 p.

Seven years have passed since Soviet Party Chief Brezhnev proposed the need for a system of collective security in Asia. Investigation reveals that Brezhnev's pronouncements on this subject were not propaganda exercises designed to secure short-term political objectives. Instead, as the thesis of this study demonstrates, the Soviet initiative for Asia constitutes a concrete, realistic policy option which challenges America's interests in that important region and deserves the attention of U.S. strategists equal to that given Soviet interests in Europe. The Soviet 'Grand Design for Asia" represents a broad security framework as a means of bolstering the USSR's global position while enhancing the accomplishment of its increasingly crucial regional objectives and interests. The primary objective of the Kremlin's security design relates to the Sino-Soviet dispute. One fundamental outcome of the deep-seated antagonism between the two adversaries is the Soviet Union's efforts to contain China as a major theme of its policy in Asia.

A secondary objective of Moscow's security scheme relates to the expansion of the USSR's regional power at the expense of the Western world. The steady buildup of Soviet influence, prestige and military capabilities throughout Asia indicates that Moscow hopes to fill the regional security vacuum left by the departure of the British and the perceived retrenchment of American power.

A more recent possibility of a Sino-Japanese partnership with the de facto backing of the United States has forced Moscow to focus its interests on its increasingly vital geopolitical East Asian front. Hence, Asia is now an area no less important to the interests of the USSR than Europe and the Middle East.

The Pacific Doctrine, as articulated by President Ford in January 1976, declares the fundamental need for U.S. strength to insure a stable balance of power in the Pacific. That doctrine, with its stated goal of opposition to any form of hegemony in Asia and throughout the globe may provide an essential framework to counter the inimical objectives of Moscow's concept for collective security in Asia.

216. CONVERSION OF SELECTED MILITARY FORCES TO THE USE OF METRIC MEASUREMENTS UNITS, by Major Gordon L. Boozer, USAF, 81 p.

Conversion of the United States military to the International System of measurement units is in the very early stages. Little formal planning has been done to articulate the management required to complete the conversion of operational Army and Air Force units. For those operational forces tasked to provide continuous combat readiness throughout metrication, management problems associated with the conversion are particularly difficult because of the nature of these assigned missions. This is the case for the 82nd Airborne Division ready brigade force (DRB) and the Military Airlift Command (MAC) strategic airlift system operating the C-141 and C-5A aircraft.

Adequate treatment of metrication management depends upon thorough preplanning and skillful resource allocation. This paper presents a descriptive and a graphic model for management of major events in the changeover process in the DRB and the C-141/C-5A system. It includes major personnel, hardware and interfacing considerations which will be critical to both combat readiness and optimal measurement system conversion.

Investigation shows that metrication of these forces within prescribed readiness constraints is feasible but will require centralized management and highly decentralized execution of many conversion activities. Successful integration of military metrication steps to match the pace of non-military conversion activities and thorough preparation of small unit leaders will be key factors in conducting an optimal conversion program.

217. THE ARMY WARRANT OFFICER CAREER: TOWARD MANAGER OR TECHNICIAN?, by Captain Bradford M. Brown, USA, 79 p.

The changing status of the Army Warrant Officer from inception to the present has created a situation whereby the warrant officer education system is beginning to closely parallel commissioned officer education. This seems to be occurring despite the fact that the warrant is defined as a highly skilled technician and not a high level manager.

This study looks at the warrant officer career program as designed and used, and finds that the Warrant Officer Senior Course seems to continue the thread of more and more generalized education for warrant officers.

This study recommends that the Warrant Officer Senior Course be eliminated as it is training technical specialists for general management positions.

218. CORPS REAR AREA SECURITY: ANALYSIS OF THREAT, DOCTRINE, AND FORCE OPTIONS, by Major Edward B. Bryson, Jr., USA, 158 p.

The purpose of this research is to determine what force is best suited for corps rear area security in a mid-intensity war in Europe. The three forces examined are the armored cavalry regiment, the corps reserve force and the military police brigade.

In arriving at a determination, the requirement for such a force is established. This is done by an analysis of the Soviet and Warsaw Pact threat and the current U.S. Army doctrine for rear area security. The threat is then combined with the geographical and organizational characteristics. This situation is then analyzed to determine the criteria for corps rear area security. This is followed by an analysis of the three types of forces to determine which force is best suited for corps rear area security.

Extensive research is conducted on existing literature concerning U.S. and Soviet doctrine as well as the mission, organization, training, capabilities, and command and control of the U.S. forces under consideration.

As a result of this research, it was determined that the Soviets emphasize the desant concept in training. This poses a threat to the corps rear area that ranges from partisan guerrilla activities to regimental size airborne and airmobile operations. Current U.S. doctrine emphasizes the employment of combat support and combat service support troops in ad hoc tactical organizations to provide rear area security. This doctrine is found not acceptable in view of the threat. An analysis of forces reveals that the military police brigade is the force best suited for the rear area security mission. However, the military police would require additional tactical training and equipment augmentation to adequately provide corps rear area security.

219. TACTICAL CONTROL MEASURES ON THE HIGH TECHNOLOGY BATTLEFIELD-A STUDY OF UNIT LATERAL BOUNDARIES IN THE FORWARD DEFENSE OF EUROPE, by Major Peter Dwight Burgess, USA, 78 p.

If the United States expects to win a land war in Europe against the Soviet Union, the Army must be prepared to fight on the high technology battlefield. Every battle practice in our existing doctrine needs critical examination to assure technological advances in weapon systems are used to the greatest advantage. Available combat power is wasted when inadequately applied in accordance with doctrine derived from the existence of a graphic control measure, the lateral boundary.

To study the influence of maneuver unit lateral boundaries on combat effectiveness, a methodology was developed which enabled qualified professional wargamers to play two scenario driven games simultaneously, thereby avoiding the bias injected by iterative gaming. Analysis and wargaming indicated that tacticians derived rules from the availability of lateral boundaries which do not adequately support current defensive concepts. Deleting lateral boundaries invalidates the tactician's boundary rules, creating a confusing void in doctrine.

It is concluded that the doctrinal void is costly and should be filled immediately by new rules which enable combat superiority from the improvements in weapon system technology. Further, the Army should commence a vigorous program to train maneuver units how to fight using a new generation of rules.

220. THE DANGER OF PREMATURE BURIAL FOLLOWING ERRONEOUS PRONOUNCEMENT OF DEATH ON THE BATTLEFIELD, by Major William Augustus Carleton, Jr., USAF, 216 p.

Battlefield casualties are summarily grouped into two categories--the dead and the wounded. Graves registration teams collect the dead, and ambulances evacuate the wounded. But who decides who is dead? On a battlefield, anyone failing to exhibit obvious signs of life can be directed into mortuary evacuation channels by virtually anyone else. Medical examination is not a prerequisite for the enclosure of casualties within air tight body bags or mortuary refrigerators. There is no clear statutory requirement for completion of a death certificate even prior to embalming.

This study examines the potential for error during early separation of the wounded from the dead during combat operations. No attempt is made to criticize military medicine. Attention is focused primarily upon public attitudes and military policies which allow a significant number of apparently dead casualties to bypass medical screening entirely.

This thesis concludes that a possibility exists for wounded, but live, soldiers to be misdirected into graves registration channels without medical examination. The author recommends an end to the use of body bags and mortuary refrigerators--except in those cases where competent, medical authorities have made a legal certification of death. A further recommendation calls for reexamination of other military policies associated with graves registration operations.

221. ARMY OFFICERS' ATTITUDES OF CONFLICT MANAGEMENT, by Major John F. Coughlin, USA, 182 p.

The purpose of this study was to measure the attitudes of the middle level career Army officers relative to the concepts of conflict management. The scope of the study narrowed the view to the interpersonal and intergroup levels of conflict.

The major conclusions, based on an extensive review of the literature concerning conflict management and its related fields of study, an exploratory analysis employing Hierarchical Clustering Schemes, and inferential tests of significance were:

(1) The middle level career Army officers have significantly positive attitudes relative to the concepts of conflict management.

(2) No difference exists in the attitudes of conflict management according to the sample's three branch groups: combat arms, combat support, and combat service support.

(3) Officers with considerable staff time demonstrated a consistent cluster relationship to the attitudes of conflict management. Command time did not show a cluster relationship.

(4) The trend toward a more flexible style of management is apparent and uniform in the middle level career Army officers.

(5) The Rider-Coughlin Instrument, empirically designed using Hierarchical Clustering Schemes, proved to be applicable to large samples and easily analyzed with published computer packages.

(6) Hierarchical Clustering Schemes determined the cluster relationships between the independent variables and the attitudes of conflict management. This exploratory method of attitude analysis identified several significant findings.

(7) The crux to the constructive management of conflict lies in the problem-solving approach within a cooperative atmosphere.

(8) Certain managerial traits are more conducive to the constructive management of conflict. These traits facilitate and develop within a cooperative and mature atmosphere.

222. COUNTER-OFFENSIVE OPERATIONS IN ALASKA: A FORCE SUITABILITY ANALYSIS, by Major Richard A. Dixon, USA, 87 p.

The development of roads and facilities in support of petroleum extraction efforts has dramatically affected Alaska's topographic environment. These events suggest a need to investigate the composition of forces assigned in Alaska to determine their suitability for operations in a changing environment.

This study compares the current force's capabilities and limitations for Alaskan counter-offensive operations against those of other force options.

Investigation reveals that topographic changes will have no dramatic effect on the need for reliance on airmobility to provide timely response to anticipated threats.

None of the forces analyzed in this study possess sufficient means to respond adequately to all expected situations.

Expanding the airborne configuration of the present force structure will increase its capabilities dramatically and render it more suitable for counter-offensive operations in Alaska during the 1980-1990 time frame.

223. THE EVOLUTION OF FRENCH ARMY DOCTRINE, 1919-1939, by Major Robert A. Doughty, USA, 149 p.

After the fall of France in June 1940, criticism of the French military concentrated on their apparent lack of intellectual talent for conceiving and fighting a modern form of war. The swift collapse of France had all too effectively demonstrated the inadequacy of the French doctrine and the unpreparedness of the French army. The theme of a congenital mental defect or "sclerosis" was often repeated to describe the underlying reason for the weakness of the High Command and the flimsiness of the defensive effort.

Many critics identified the prewar doctrine of the defense, continuous front, and firepower as the most important evidence for demonstrating the High Command's responsibility for preparing for the war of the past, rather than the war of the future.

Such simplistic themes of incompetence or stupidity, however, do not adequately portray the intricate and involved process which resulted in the doctrine of the defense, continuous front, and firepower. Numerous problems, that sometimes are considered external to the particular concerns of the military, intruded to profoundly influence the formulation of this doctrine. Some of these intervening variables for France from 1919-1939 were historical tradition, political restraints, and economic geography. Other military questions such as personalities of leaders and technological innovations (or lack thereof) also were important. Each contributed to a situation wherein the French military found themselves entangled in the remnants of the doctrine left over from 1918, without the capability or even the desire to extract themselves from a concept of war imbrued into the very soul of France. In short, the automatic assignment of complete responsibility to the military for the "fallacious" methods of 1940 ignores the complexities of doctrine formulation and prevents many critics from understanding what actually happened to France from 1919 to 1939, and then in 1940.

224. WHEN SHOULD A COMMANDER BE RELIEVED? A STUDY OF COMBAT RELIEFS OF COMMANDERS OF BATTALIONS AND LOWER UNITS DURING THE VIETNAM ERA, by Major Thomas V. Draude, USMC, 78 p.

This study attempts to determine when commanders of battalions and lower units should be relieved during combat. The investigation analyzed actual reliefs during the Vietnam era to determine why the commanders were relieved, the availability of replacements, the role of counselling, and the effect on the unit.

Investigation reveals that most reliefs were not caused by a single deficiency but rather by a combination of perceived shortcomings. Mission failure was not a significant reason for relief. Captains and lieutenants were more likely to be relieved than were lieutenant colonels. Replacements for the relieved commanders were usually available. Most reliefs were effected without prior counselling. The effect of the relief on the unit depended primarily on the unit's evaluation of the relieved commander's leadership and popularity.

Further examination of the causes and effects of reliefs produced guidelines for commanders to consider before relieving a subordinate commander.

225. THE SOVIET INVASION OF MANCHURIA, 1945: AN ANALYSIS OF THE ELEMENT OF SURPRISE, by Major Harmon L. Eaton, USA, 184 p.

This study analyzes the Soviet invasion of Manchuria in August 1945 emphasizing the role played by the element of surprise. The analysis shows how the Soviets applied surprise against the Japanese at the strategic, operational and tactical levels; how the character of the element of surprise varied from echelon to echelon; and how the outcome of the campaign reflected the results of surprise.

Since its beginning the Soviet Army has shown an awareness of surprise, which actually has been included as a basic principle of war by Western military writers from the time of Carl von Clausewitz to the present. Today, modern Soviet theorists, such as Colonel V. Ye. Savkin in his 1972 work Basic Principles of Operational Art and Tactics, continue to count surprise among the most important principles of war. In examining the Manchurian campaign at the strategic level, we find the attainment of surprise was taken into consideration both in the diplomatic arena and in high-level military planning for the campaign as a whole. Timing was especially critical. At the operational and tactical levels, the Soviets made use of available natural factors, took elaborate precautions during their preparations for the invasion, and used such innovative tactics as spearheading the main attack with a tank army in a sector which included formidable desert and rugged mountain terrain. The invasion was fully unexpected, and when it came the Japanese Kwantung Army in Manchuria was totally unprepared to meet it. There is little doubt that surprise was a major contributing factor in helping the Soviets achieve dramatic success against the Japanese, and the campaign is a particularly good example of how the Soviets translate their theory of military art into practice.

226. THE EROSION OF FRINGE BENEFITS AND ITS NEGATIVE EFFECT ON ATTITUDES AND CAREER INTENTIONS OF REGULAR ARMY OFFICERS, by Major James J. Foley, Jr., USMC, 110 p.

Many soldiers feel that their fringe benefits are being gradually but steadily worn away. The benefits themselves exert a significant influence on an individual's decision to make the Army a career. This study, aimed at Regular Army officer students at the Command and General Staff College, attempts to determine the effect of the perceived erosion of benefits on career planning decisions and on officers' attitudes concerning the Army.

The investigation focused on the deterioration of the fringe benefit package as a whole, medical care benefits, retirement benefits, commissary store privileges, and the unwritten contract. Twenty-four other factors affecting retention were examined briefly to put the erosion of benefits in proper perspective.

The research reveals that the disintegration of the whole fringe benefit package, and particularly medical care and retirement benefits, are strong influences to leave the Army. The deterioration of the commissary store privilege is also an influence to leave, albeit weaker, while the unwritten contract is still a relatively weak incentive to stay. The perceived erosion of benefits is contributing to reduced career aspirations. Those officers who are strongly influenced by these issues are older, have served longer, are unhappier about the fringe benefit situation, are less inclined to encourage junior officers to pursue an Army career, and have decided to retire with between 20 and 25 years of service. Having selected a retirement date, they are less sensitive to the whole issue than their contemporaries with indefinite or unlimited career aspirations who will stay longer if the benefits stabilize and leave sooner if the decay continues.

227. UNITED STATES DIVISIONAL ARTILLERY: A STUDY OF VULNERABILITY TO SOVIET COUNTERFIRE, by Major Stephen M. Gallagher, USA, 99 p.

The recent growth of offensive capabilities in the Soviet forces has stirred concern within the free world. This thesis examines the extent of the current Soviet counterfire threat to the United States field artillery and its capability to provide effective fire support to maneuver forces.

A comparative analysis is made using the artillery with a U.S. division and that which the USSR would probably employ against it in Europe during the 1976-1978 period. The investigative vehicle for the analysis is the "principles of effective counterfire," or PEC, which is composed of the fundamental elements of artillery combat: doctrine, tactics, counterfire systems, and personnel preparedness. Proposals are offered which are intended to reduce existing imbalances and vulnerability.

228. OPERATION NEW LIFE: CAMP OROTE-A STUDY IN REFUGEE CONTROL AND ADMINISTRATION, DOCTRINE AND PRACTICE, by LTC George Gonsalves, Jr., USA, 206 p.

As a result of the fall of the Government of South Vietnam in the spring of 1975, more than 100,000 refugees fled that country. The majority of all refugees under United States control were processed through Camp Orote, an interim refugee center on Guam. This study addresses the problems experienced by Army personnel who were given the mission of operating Camp Orote as a part of Operation New Life. This camp reached a peak population of 39,331 and processed more than 90,000 refugees between 23 April 1975 and 24 June 1975.

The methodology consisted of the historical method of research in combination with the author's eyewitness account and personal notes. In describing the organization, structure, and functions of the military and civilian agencies that were involved in the operation, primary emphasis was on the Army s capabilities and efforts.

Based on the results achieved, the study supports the hypothesis that current U.S. Army doctrine and training are inadequate insofar as they pertain to refugee administration and operation. Recommendations are suggested to improve the doctrine available to commanders and to emphasize training requirements to civil affairs as well as other military personnel. Some of the specific recommendations are that Department of the Army:

. Reassess its civil affairs capability, because there appears to be a requirement for more than one active duty civil affairs battalion in the force structure.

. Exchange liaison and training visits between selected civilian agencies and selected military civil affairs personnel.

. Increase training in ethnic and cultural characteristics for all of its personnel, thereby enhancing the soldier's sensitivity to and understanding of foreign cultures and his ability for intercultural communication.

. Allocate research and development resources to the design of prepackaged material and equipment to be used to support that aspect of civilian emergencies which deals with refugees.

. Conduct research to determine the effect of the presence of armed and unarmed military police vis-a-vis the use of personnel less specialized in security procedures for a crisis that involves civilians.

. Develop specific policies that permit the hiring of civilian refugees who result from man-made or natural disasters.

. Identify and deploy medical personnel in consonance with the demands imposed by emergencies that involve civilians.

All of the preceding recommendations have implications for policy makers and suggest areas for further research.

229. TACTICAL NUCLEAR PLANNING CONSIDERATIONS-RECENT PERSPECTIVES, by LTC Julian H. McWhirter, Jr., USA, 62 p.

Approval to use nuclear weapons in some future war may require careful planning. One of the National Command Authority's concerns in the event of another war in Europe is collateral damage resulting from nuclear weapons use. The United States Army policy for the constrained use of nuclear weapons emphasizes this national concern.

This study attempts to determine the planning factors which should be considered by a corps commander before he requests approval to make the initial use of nuclear weapons in Europe. The investigation is focused on an analysis of current United States and NATO policies, doctrine, and procedures.

Investigation reveals that peacetime planning for the use of tactical nuclear weapons should be done and that current procedures may require modification if adequate plans are to be prepared. Further examination discloses that peacetime plans based on national and NATO command authorities' policy guidance may provide the principal information from which to prepare a justification for the use of nuclear weapons.

230. FASHODA: TURNING POINT IN ANGLO-FRENCH RELATIONS: A STUDY IN MILITARY-POLITICAL AFFAIRS, by Major Paul W. Grenier, USA, 85 p.

This thesis deals with the military confrontation between French and Anglo-Egyptian forces at Fashoda, in the Nilotic Sudan, during the period 19 September to 11 December, 1898. It examines the confrontation, on both the French and the British sides, as to origin, preparation, conduct, and resolution.

It concludes that the peaceful resolution of the Fashoda Crisis was a major contributing factor in the Entente between France and Great Britain in 1904, and that an analysis of the political-military relationships used by France in her military failure at Fashoda, and by Great Britain in her success, shows that military activity is and must be politically defined, that conflict of interest is detrimental to military efficiency, and that victory is ultimately a political concept.

231. THE MILITARY SURGEON: PAST, PRESENT AND FUTURE, by Major Thomas F. Grimes, Jr., USA, 84 p.

The role of the military surgeon has markedly changed in recent years, including frequent replacement of physicians by Medical Service Corps officers. Definitions of the surgeon's role are examined and definitions of military medicine are analyzed. The history of the development of the American Military Surgeon is outlined, with emphasis on the acquisition and training of the surgeon, and the strong traditions of the American military physician are portrayed.

The perceptions of 1976 Command and General Staff College students toward the evolving role of the surgeon were determined by a survey which indicated recognition of the existence of Army Medicine. The students favored retaining the physicians role in field units and maintaining a distinct Army military medical department, but they did not recognize requirement for extensive military training of the physician. There was a lack of an extensive appreciation for the organization of the Army Medical Department.

The thesis concludes that physicians continue to be required in military staff positions.

232. THE COMMUNIST ARMY OF GREECE, 1947-1949: A STUDY OF ITS FAILURE, by Major Thomas A. Haase, USA, 138 p.

This research project is designed to examine the empirical evidence available to date concerning the reasons for the defeat of the Communist Army of Greece in 1949. This work is the result of this author's endeavor to understand and evaluate why the Communist Insurgency failed in Greece.

This failure is specifically addressed herein to determine whether the Communist defeat was the result of military action or political turmoil within the Communist Party of Greece. In order to answer this question, the study provides an historical interpretation of all the significant events during the existence of the Party from 1919 to 1949.

Investigation reveals that the Greek Communist Party strategically lost the war when the Central Committee reintroduced the question of the creation of an independent Macedonia as part of the Party's objectives. On the military side of the problem, the decision by the Communists to switch from subconventional to conventional warfare was the most serious mistake made. This change of policy was predicated on the existence of a large popular base from which to operate. This study demonstrates that there was no large popular base.

233. DIGITAL VOICE - A KEY TO TACTICAL COMMUNICATIONS IN THE 1980's, by LTC Jack C. Hammett, Jr., USA, 152 p.

This research is a study of the performance of U.S. Army voice circuits in the transitional DoD telecommunications system of the 1980's. Transmission, switching, and user terminal facilities will be converted from analog to digital operation during the next two decades. Voice circuits during the transition will be composed of various tandem (series) connections of pulse code modulation (PCM), continuously variable slope delta (CVSD) and vocoder links.

The purpose of the research is to determine if the system design for the 1980's results in isolated pairs of users. The approach is to examine the technical characteristics of digital voice links, to consider the system plans of the Services and DoD Agencies, to evaluate the mode of interoperability at the boundaries which join the several regions of the overall DoD system, and to analyze the signal-to-noise ratio (SNR) performance of tandem-link circuits within the U.S. Army system.

The study concludes that some isolated pairs of users will exist in the transitional system, but the occurrence of isolated pairs of users may be minimized by providing digital transmission paths to directly interconnect communities of 16 kB/s subscribers. The system designs for the U.S. Army System and the overall DoD System include workable interoperability solutions. By managing the transition in an enlightened manner, the reliability of secure voice communications may be enhanced and the operational capability to satisfy new data communications needlines may be increased.

The principal recommendation of the study is that the occurrence of tandeming of voice links should be minimized.

234. LIGHTER THAN AIR (LTA) VEHICLES IN LOGISTICS OVER THE SHORE (LOTS) OPERATIONS, by Captain John Robert Hauser, Jr., USA, 66 p.

The U.S. Army today is faced with a dilemma. This situation arises from the conflict of having to logistically support potential Army commitments worldwide with outdated techniques and equipment. Up to now, the Army has relied on Logistics Over the Shore (LOTS) operations to resupply forces already ashore in the absence of adequate fixed port facilities. However, the techniques and equipment designed for LOTS operations, until recently, have envisioned the World War II type of operation which transfers and distributes break bulk cargo. The advent of containerization has led to the diminished use of break bulk cargo type of operations. Large scale use of containers has become standard operating procedure in the Army.

As these changes have proceeded over the years, proposals have been made to meet these new requirements. One such proposal resulted in the testing of all currently available lighterage vehicles and the adoption of the Lighterage Air Cushion Vehicle (LACV-30) to support containerized LOTS operations. Another more recent proposal has been the debut of the Aerocrane as a potential lighterage vehicle. This thesis investigated this relatively new development to determine the feasibility of using Aerocranes in LOTS

operations and their advantage in comparison with current Army lighterage. The conclusion is that the Aerocrane is both more responsive and more cost effective and should be adopted to support containerized LOTS operations.

235. A COMPARISON OF THE M-180 DEMOLITION CRATERING KIT WITH STANDARD CRATERING PROCEDURES, by Major Robert Leo Holland, USA, 94 p.

This study compares the M180 Demolition Kit with Standard Cratering Procedures. A systems comparison is made by evaluating six Measures of Effectiveness: employment, training, obstacle effectiveness, reliability, logistics and safety, and cost. The results of a survey to determine alternate cratering systems are presented. The impact of fielding the M180 is assessed.

It was determined that the M180 is superior to standard cratering procedures in that it can be emplaced faster, requires fewer men and less training, is simple to assemble, is more reliable, produces more effective craters, contains all explosive components within one kit, and reduces the number of explosive line items required from seven to one. The disadvantages of the kit are that it requires a 50-cap blasting machine to initiate detonation and it is more expensive than standard procedures.

There are no alternate cratering systems available which can be emplaced as rapidly as the M180. The M180 provides the tactical commander increased flexibility in the rapid emplacement of road craters.

It is recommended that the M180 be produced as soon as possible and that the M34 50-cap blasting machine replace existing standard 10-cap and 50-cap blasting machines.

236. A SOCIAL HISTORY OF THE TENTH CAVALRY, 1931-1941, by Major Jesse Jackson, Jr., USA, 88 p.

A survey of the literature of the Tenth Cavalry revealed there was no history of the unit while serving as a service detachment at Fort Leavenworth, Kansas, between 1931-1941. This paper is an effort to establish the records of the unit's social activities for continuity of unit history especially those of black soldiers, serving in segregated units.

The information for this study centered around material obtained from questionnaires and interviews with former members of the unit. Also, extensive use was made of the Leavenworth Times and the Armored Cavalry Journal.

An effort was also made to set the scene by providing a brief overview of the black soldier's contribution to America's war efforts and a chronological history of the Tenth Cavalry from its inception in July 1866 to 1931.

Between 1931-1941, while at Fort Leavenworth, the black troopers were either barred or discouraged from using many of the exchange and recreational facilities on post. Even so, they were loyal troopers who performed creditable service and were proud to be members of the Tenth Cavalry. The citizens of Leavenworth displayed a positive attitude toward the troopers which resulted in amenable relations during the occasional contact between the two societies.

The unit was returned to combat status in 1941 and subsequently moved to Fort Riley, Kansas. Even though it has been many years since the troopers of the Tenth Cavalry departed, their memory still remain. The pride Fort Leavenworth still has in the Buffalo Soldiers was displayed in recent ceremonies where one of the streets on post was named for the famed Tenth Cavalry.

237. A METHODOLOGY FOR PREDICTING AMMUNITION REQUIREMENTS AS A FUNCTION OF FORCE SIZE, by Major Edward M. Kelley, USA, 96 p.

Fundamental to military planning is accurate prediction of ammunition requirements to support combat operations. Although this is a recognized fact, it is an area of planning with many uncertainties, misconceptions, and a widespread lack of understanding. In dealing with this general problem, this thesis addresses the more specific problem of the relationship of ammunition requirements as a function of the size of the force under consideration. A methodology which relates ammunition requirements to the size of the force in terms of the number of weapons of a given type in the force is proposed. A modification of the Delphi method is applied to determine the validity of the results of the application of the methodology. The research effort does not attempt to validate or refute ammunition consumption rates contained in current Department of the Army documents which contain ammunition consumption rates for planning purposes such as FM 101-10-1 and SB 38-26. The research assumes the validity of the given rates and uses these rates as the limiting values of the methodology. The author concludes that the intended purpose of the research has been accomplished and the methodology does provide useful data for predicting ammunition requirements as a function of force size.

238. AN EXPLORATORY ASSESSMENT OF THE MOTIVATION TO MANAGE AMONG MID-GRADE ARMY OFFICERS, by Major Charles L. Lardent, USA, 198 p.

This study examines the relationship between command or managerial success and various attributes of motivation. Specifically, the intent of the study is to conduct an exploratory assessment of the motivation to manage among a sample of mid-grade Army officers.

In this study, a survey of the major theoretical positions relative to leadership and work motivation is presented, along with a review of selected literature. The major theories are useful primarily in their ability to establish conceptual frameworks and global perspectives, but they are limited in their usefulness at a particular operational level. It is suggested that what is needed to fill this void are a select number of limited domain theories. Thus, this study is conducted on the premise that it will help lay the groundwork for this objective.

The research plan called for the administration of a brief biographical data questionnaire and three psychometric instruments. The immediate objective of this study, and its operational definition of success, was the capability to determine if managerial success can be explained, in part, in terms of magerial motivation. From a mid-range point of view the study helps provide a comparative data base. From a long range perspective, the findings of this study provide a rationale and impetus for ongoing managerial motivation research.

The findings reveal that there are unmistakable managerial motivation attributes present in the CGSC sample of officers. These attributes distinguish them from the general population. However, their relative level of managerial motivation is significantly less when compared to a large sample of civilian managers. Interestingly, though, when the sample is divided into two sub-groups, with sub-group 'A' indicating a greater proclivity toward managerial roles and behaviors than sub-group 'B', additional significant findings emerge. Sub-group 'A' is significantly higher than sub-group 'B' with respect to managerial motivation, and is quite similar to the norms for a large sample of successful managers. There are minor variations in the results, but in general, the findings are clear in their support for the motivation to manage construct among mid-grade Army officers.

239. THE REGIMENTAL SYSTEM IN THE UNITED STATES ARMY: ITS EVOLUTION AND FUTURE, by Captain Walter L. Mayew, USA, 180 p.

From the American Revolution to the mid-20th century, the regiment, with only a few exceptions, was a primary Army organization. The regiment was also a primary vehicle for the development of American Army histories and traditions. Because of its prominence in history, there are a number of champions for revival of the regiment as an active Army organization.

This study examines the evolution and future of the regiment as an American Army organization. Its purpose is to provide information for a response to the question, "Should the regiment be revived as an active Army organization?" The Army today faces a challenge of providing the best possible organizations with constrained resources. In light of this challenge it is beneficial to consider the historical implications in major reorganization at regiment level.

Regiments are no longer active U.S. Army organizations because reorganizations caused by improving technology and tactics resulted in their elimination from American Army divisions. The inactive regiments are still an influence on Army organization through the Combat Arms Regimental System (CARS). CARS provides many advantages of the regiments without the turbulence of frequent inactivations and reorganizations which led to the regiments retirement. The study concentrates on history in order to explain what the regiment was. Problems experienced by the regiments and organizational changes are highlighted throughout the thesis.

The Army's libraries provided the source material through published histories of the Army, periodicals, reports, and printed records. The study concludes that the regiment should remain in retirement providing its treasures of history through the Combat Arms Regimental System. Because of the great dispersion of modern battlefields, conventional or nuclear, the Army must have tactical organizations that are capable of independent operations that are self-sufficient administratively and logistically. Today's battalions now meet those requirements with more flexibility than was possible with the old regiments.

240. ARMY HELICOPTER NIGHT/ADVERSE WEATHER SYSTEM (N/AWS), by Major Ronald S. Michaels, USAF, 134 p.

This study undertakes an investigation of the feasibility of developing a helicopter night/adverse weather system for the Army by modifying systems currently used in Air Force C-130 and C-141 tactical airlift aircraft. In being systems examined include: Stationkeeping Equipment (SKE), Zone Marker (ZM), and Zone Marker Group (ZMG). For purposes of this study the acronym "N/AWS" specifies the combined capabilities of these three systems.

Those factors investigated in this thesis which were considered to have greatest impact on night/adverse weather operations include: Army doctrinal requirements, weather conditions, anti-helicopter threats, crewmember physiological limitations, and cost effectiveness.

Three significant findings were revealed in the study: A valid requirement exists for developing a helicopter night/adverse weather system; available equipment (described as the N/AWS) provides a feasible solution to satisfy the void stated in the requirement; and state-of-the-art technology can provide a N/AWS for Army helicopters, through retrofit action.

The study concludes that a N/AWS is feasible and that adoption of it will increase the staying power of Army helicopters in future mid-intensity conflicts.

CLASSIFIED

ABSTRACTS

LIST OF CLASSIFIED SUBJECTS

Air Defense C28

Air Support C3, C11, C31, C32

Armor C2, C32, C35

Artillery C12, C22, C30

Aviation, Army C20, C29

China C6

Code of Conduct C34

Combat Service Support C2, C25

Combined Arms C14

Command C9, C27

Communications C26

Fire Support C19, C21

Insurgency C12, C26

Joint Operations C19

Leadership C1, C33

Medical C27

Night Operations C11

Nuclear C4, C5, C7, C8, C10, C13, C16, C23, C24, C30

Organization C2, C12, C14, C21, C22

Psychological Operations C32

Russia C1

Saudi Arabia C33

Tactics C10, C13, C15, C31

Target Acquisition C22

Vietnam C11, C15, C17, C18

INTRODUCTION

CLASSIFIED THESES

The following titles indicate classified theses subjects and are not for general use. Any person with the proper clearance may request copies of these theses.

The first thirty classified titles also have classified abstracts and can not be reproduced here. Since 1975 classified theses have unclassified abstracts and they are reproduced here.

THESES BY YEAR

1964

C1. The Soviet Soldier - A Study of His Background and Leadership Environment, 140 p.

C2. The Adequacy of the Combat Service Support Organization of the ROAD Division to Provide Effective Support for a Selected Offensive Operation by an Armored-Type Division, 132 p.

C3. Decision Criteria for Determining Employment of Close Air Support, 146 p.

C4. The Employment of Underground Atomic Demolition Munitions in Barrier and Denial Operations Within the Field Army, 133 p.

C5. Electromagnetic Pulse Effects on Division Operations, 141 p.

C6. Some Characteristics of the Communist Chinese Soldier Which Can Be Exploited by Psychological Operations and the General Nature of These Operations, 124 p.

C7. On Military Terrain Modification with Nuclear Explosives, an Illustrated Historical Appraisal and Future Visualization, 343 p.

1965

C8. An Evaluation of Field Army Ammunition Supply Support Under CCSTAR in a Nuclear Environment, 173 p.

C9. An Analysis of Command and Control in the ROAD Division Support Command Headquarters, 159 p.

C10. The Tactical Employment of Atomic Demolition Munitions in Division and Corps Combat Operations (1965-1970), 238 p.

C11. Night Air Operations in Vietnam; An Evolving Doctrine for Counter-insurgency, 182 p.

C12. Field Artillery Mission Weapon and Organization for Counterguerrilla Warfare, 148 p.

1966

C13. Mobile Defense in a Nuclear Environment, 269 p.

C14. A Proposed Division Organizational Concept Featuring Combined Arms Battalions, 220 p.

C15. Military Tactics for Phase III: Mobile Warfare in Vietnam, 1964-1965, 154 p.

C16. The Advantages of a Specific Type Controlled Effect Nuclear Weapon in the Division Support Role, 90 p.

C17. The Viet Cong Soldier: His Strengths, Weaknesses, and Vulnerabilities 199 p.

C18. A Study of the Military Support of Pacification in South Vietnam, April 1964-April 1965, 306 p.

C19. Fire Support for a Large-Scale Amphibious Landing, 125 p.

C20. A Proposed Aircraft Accident Prevention Doctrine for the United States Air Force, 230 p.

1967

C21. The Organization of the Fire Support Components of the United States Army Division in 1970-75, 122 p.

C22. Organization of Field Artillery Target Acquisition Systems, 107 p.

C23. The Use of Fallout in Barrier and Denial Operations in the Field Army, 96 p.

1968

C24. U.S. Army Qualitative Materiel Requirements for Nuclear Demolition Munitions,

1969

C25. A Concept of Theater Level Support for U.S. Army Forces in Central Europe in the 1970-80 Decade, 276 p.

C26. Security Land Lines of Communication in Insurgency War--A Proposed Doctrine, (on microfilm only.)

1971

C27. Effects of Sleep Loss on the Battalion Commander in Continuous Operations, 150 p.

1972

C28. Short Range Air Defense Systems (1980-85) Guns or Missiles, 129 p.

C29. Cover and Concealment of Army Aircraft, 74 p.

C30. The Artillery Division: A Concept for Tactical Nuclear Operations, 92 p.

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C31.	(S) The Air Cavalry Troop's Capability to Perform as a Covering Force in European Mid-Intensity Warfare (U), 210 p.	310
C32.	(C) Hellfire Designator Survivability (U), 75 p.	311
C33.	(S) An Analysis of the Decisionmaking Elite for the Kingdom of Saudi Arabia (U), 219 p.	313

1976

C34.	( ) Article V of the Code of Conduct and Today's Ideological Environment (U), 194 p.	315
C35.	( ) Tanks in the 1973 Middle East War: Which Study to Believe? (U), 157 p.	315

C31. (S) THE AIR CAVALRY TROOP'S CAPABILITY TO PERFORM AS A COVERING FORCE IN EUROPEAN MID-INTENSITY WARFARE (U), by Major Mark L. Bellamy, Jr., USA, 210 p.

(U) In an attempt to determine the extent of an air cavalry troop's ability to replace other units as a covering force, a search of documents and computer war game results was initiated. The lack of helicopter experience in mid-intensity combat hampered the study. However, occurrences during LAMSON 719 and the 1972 Battle of Kontom were used as a point of departure.

(U) The potential threat to the covering force was identified as an armor spearhead consisting of 15 armored vehicles (10 tanks, three armored personnel carriers, and two self-propelled antiaircraft gun systems). Advancing behind this armor spearhead would be an enemy tank or motorized rifle division with two regiments abreast. Each regiment would travel in two columns.

(U) After identifying the unit composition, the types and numbers of weapons utilized for air defense by an enemy division was delineated. Then the vulnerability of the air cavalry helicopters to these weapons was examined.

(U) Air cavalry tactics and weapon systems to counter the threat were evaluated. The capabilities of the heliborne TOW were also presented.

(U) Detection of and by the air cavalry troop was derived from field experiments. They indicated that nap of the earth flight and pop-up firing techniques for the TOW missile would give the air cavalry flight teams the ability to survive in an environment of optical and radar controlled antiaircraft weapons.

(U) The established capability of the division to locate enemy air defense systems and division artillery's ability to suppress that threat further improves the air cavalry troop's chances of success. Additionally, the necessity to protect the unit from aggressor high performance aircraft and attack helicopters was addressed. This "whole team" or combined arms concept added greatly to the ability of the air cavalry troop to perform as a covering force.

(U) Final consideration of the capabilities and reaction times of the ZSU-23-4, ZSU-57-2, and T-62; the time of flight of the TOW missile, the low incidence of detection of NOE operated helicopters; and the capabilities of the aero-scout and aero-rifle platoons led to the conclusion that with skillful employment the air cavalry troop could function as a covering force in mid-intensity, European warfare.

C32. (C) HELLFIRE DESIGNATOR SURVIVABILITY (U), by Captain Orlin L. Mullen, USA, 75 p.

(U) HELLFIRE, acronym is HELicopter Launched FIre and taRgEt, is the Army's current laser development project. This project is intended to fulfill the Army's need for an improved long range anti-tank missile system with (a) a high probability of hit independent of range, (b) a weapons system that can be effective with minimum deployment to the forward edge of the battle area, and (c) the capability to engage separate targets in rapid sequence. The system is composed of a missile firing helicopter and a laser target designator. The ability of the system to fulfill the stated needs is based on the mobility of the helicopter and the technical characteristics of the laser.

(U) The laser performs its designation role by directing a narrow beam of infrared light energy at a target. The laser energy reflected by the target is acquired by a reception unit in a helicopter-borne missile. After missile launch, the missile homes on the reflected beam until target impact.

(U) Initial field evaluation of HELLFIRE revealed several problem areas. One of the most important problems was the unacceptable short life expectancy of the laser designator due to detection and destruction by the enemy. Because laser energy can be easily detected by the target vehicle being designated, the laser alerts target vehicle personnel that they are under attack.

(U) There are two proposed solutions to the vulnerability problem. Both seek to reduce vulnerability by presenting a target selection problem to the enemy. The first system, Area Simultaneous, hereafter denoted as Wide Beam, uses a wide beam special laser in conjunction with the narrow beam designator. The intent of this system is to confront the enemy with two widely separated, nearly concurrent, target sources. The lateral separation should force the enemy to use time while traversing, acquiring, and attempting to destroy both lasers.

(U) The second system, Multiple Laser Source Signature Simulators, hereafter denoted as Multiple Laser, uses a small number of unattended, omni-directional, infrared emitters in the immediate vicinity of the designator. Because the emitters are indistinguishable from the designator, the enemy is again forced to use time while attempting to destroy the real designator.

(U) The objective of this paper is two-fold. The first is to evaluate the data generated in field tests of the two vulnerability reduction systems, and to determine if there is a significant difference between survival times for designators in the two systems. Secondly, a methodology applicable to this evaluation and similar problems will be developed.

(U) Evaluation of the two proposed systems is based on the hypothesis that there is no significant difference between the vulnerability reductions achieved. The hypothesis is tested by two methods, empirical and constructive. The empirical test used is the two-tailed Chi-Square test. The constructive test is the graphical comparison of the cumulative probability of designator kill distributions of the two systems. The null hypothesis will not be rejected if no significant difference in system populations can be reliably predicted. Both systems are compared with results obtained from tests of an unsupported designator.

(U) The data used for the evaluation of the two systems is the product of field tests conducted by CEDEC, Combat Developments Experimentation Command. In these tests, tanks equipped with laser alarm and locator systems were run through a series of trials in which they were subjected to random laser designations by system designators. On receiving a laser alarm, the tank gunner attempted to precisely locate, pinpoint, the designator. The data generated consists of times to critical events; e.g., initial alarm, time of pinpoint, etc.

(U) The methodology developed to perform the evaluation objective is the preparation, formation, and comparison of designator kill distributions. Preparation includes discarding of impossible events, instrument errors, and extreme data points. Distributions were formed using data collected from engagements lasting approximately one minute. Cumulative probability of designator kill distributions were compared to determine distinctive trends and critical times. Cumulative designator kills were compared by empirical tests at 40 and 60 seconds elapsed designator exposure time.

(U) The result of the development and comparison of designator kill distributions is as follows:

1. There is no predictable difference in system vulnerabilities for the first 10 seconds of designator exposure time.

2. From 10 seconds through 60 seconds, the Wide Beam designator is more vulnerable than the Multiple Laser designator.

3. From 20 through 40 seconds, the Wide Beam designator is a great deal (15 to 20%) more vulnerable.

4. By empirical tests, after 40 seconds, the systems show significantly different results (at 10% significance level).

5. The cumulative probability of designator kill distributions converge in the 60 to 70 second time frame.

6. Both systems represent a vulnerability reduction over the unsupported designator.

(U) The null hypothesis, that there is no significant difference between the vulnerability reductions achieved is rejected at the 10-percent significance level. The Multiple Laser and the Wide Beam systems have distinctive cumulative probability of kill distributions. Both systems produce a significant reduction of designator vulnerability; however, the Multiple Laser system, as tested, is significantly less vulnerable over a critical period of exposure.

(U) Multiple Laser system is amended by the "as tested" comment to emphasize two conclusions. First, the proposed system was not actually tested. The absence of the destructive effects of actual ordnance permitted the infrared emitters to continue their mission after their hypothetical destruction. Thus, the enemy gunner's target selection problem did not improve as time progressed. However, it would not be difficult to attain these performance characteristics in an actual system. Therefore, it can be concluded that the Multiple Laser concept does represent a significantly better approach to the vulnerability reduction problem. Secondly, the tests that were conducted indicate that the Multiple Laser system, as proposed, has a vulnerability distribution substantially different from the Wide Beam distribution.

(U) Included in the recommendations of this study are the following areas of special emphasis:

1. Improvement of special lasers.

2. Development of computer controlled laser alarm locator/fire control systems for tanks.

3. Determination of probability of hit for very small emitters.

4. Determination of the feasibility of an enemy firing a laser homing missile at the designator.

C33. (S) AN ANALYSIS OF THE DECISIONMAKING ELITE OF THE KINGDOM OF SA'UDI ARABIA (U), by Major Michael W. Totten, USA, 219 p.

(U) This thesis is a partial examination of the foreign policy system of the Kingdom of Sa'udi Arabia which focuses on the decisionmaking elite at the core of that system. The underlying premise of the study is that the key variable in any foreign policy system is the perception held by the decisionmaking elite, as the individual members of that elite act in accordance with their perceptions of reality, not in response to reality itself. The ultimate purpose of the study is the establishment of a framework for the more systematic prediction of the Kingdom's behavior in the international arena.

(U) For the purposes of the analysis, the Kingdom's foreign policy system is treated as an input-output model in which inputs are both the actions of other states and internally-generated demands, and outputs are decisions which affect foreign policy. The four critical components of the

system are considered to be the environment in which it must operate, the actors who make or influence decisions about foreign policy, the structures through which they initiate or implement these decisions, and the processes of decision formulation and implementation.

(U) The environment is divided into an external and an internal component. The external or geopolitical setting in which the Kingdom's elite must design and execute policy has been separated into three related state systems: the global, the middle eastern, and the Persian Gulf. In each of these systems, the Kingdom's roles are shaped by its economic power, the conservatism of its leadership, and its religious centrality. The internal or domestic environment in which the elite must function is shaped, on one hand, by its political organization as a traditional Islamic monarchy and, on the other, by the pressing requirements to modernize and to differentiate its economy and infrastructure. These two elements create the internal pressures and shape the elite perceptions which affect foreign policy decisions.

(U) The decisionmaking elite itself is a relatively small group of Royal Family members and advisors. They are identified by name and position in the study; and, so far as available data will allow, the sources of their power and the techniques employed in its use are described. The structures within the political organization through which elite decisions are initiated and implemented are also examined.

(U) The societal pressures which place demands on the system from within the Kingdom are presently in flux. The older, more parochial, interest groups are deteriorating and being replaced by two larger more articulate generic pressure groups, treated in the study as traditionalists and modernists. While both perform as policy advocates and information transmission channels, the modernists appear to be of greater importance. They are not only gaining strength and influence, but they also offer the potential for a gradual but significant redirection of the pressures now being brought to bear on the elite in the foreign policy area.

(U) Based upon the analysis of these system components, the study postulates four significant commonly-held perceptions for the elite as a whole. These perceptions are a preoccupation with the preservation of the Royal Family's hegemony, a defensive conservatism, regional imperialism, and Wahhabism. The study then examines the operation of these perceptions on the elite's choice of policy options in the period from 1962 to 1974.

(U) The study reaches two tentative conclusions about the Kingdom's foreign policy system as a whole. They are:

1. The Kingdom's foreign policy is likely to be consistent in the foreseeable future, as a result of the similarity between elite and societal perceptions of the external environment.

2. A reaction in the Kingdom's foreign policy is assured only when there is a significant change in the status quo of one or more of the eight states which occupy the littoral territories of the Arabian peninsula.

(U) Finally, on the premise that the elite perceptions are likely to change only gradually over the continuum, the study discusses some of their implications for future U.S. foreign policy in the Middle East. It also raises and discusses some of the implications of the recent change in Sa'udi leadership.

C34. (S) ARTICLE V OF THE CODE OF CONDUCT AND TODAY'S IDEOLOGICAL ENVIRONMENT (U), by Captain Herbert W. Goodyear, USA, 194 p.

(U) In the evaluation of American prisoner of war experiences in North Vietnam it becomes apparent that Article V of the Code of Conduct is a critical factor determining the behavior of captured servicemen. It is the most important source of guidance for individual conduct when confronted by enemy interrogators. In his status as a prisoner of war, a man is pitted against an entire ideology.

(U) The purpose of this thesis is to establish the applicability of Article V of the Code of Conduct in today's ideological environment as it relates to military personnel successfully frustrating Communist attempts at exploitation in North Vietnam. This necessitates investigation into the development of secondary lines of resistance beyond name, rank, serial number and date of birth (NRSD) as an essential element of pre-capture training in support of Article V.

(U) A systematic presentation of the facts is made possible by using the historical approach, and the comparative analysis model correlates the principle factors under investigation: 1) Article V of the Code of Conduct, 2) survival training given United States Air Force personnel, 3) Communist philosophy and objectives, 4) treatment by the Communists of American captives in North Vietnam, and 5) the comments and recommendations of prisoners of war returning from North Vietnam.

(U) Evaluation of the research leads to several conclusions. The necessity remains to have Article V of the Code of Conduct uniformly interpreted among the services. Military personnel need greater understanding of the Communist mentality and ideology. Article V injunctions against making oral and written statements or restricting communication with the enemy to NRSD are inapplicable, in view of Communist reliance upon physical torture to achieve exploitation objectives. Article V of the Code of Conduct, to be a meaningful guide to captive behavior, must include recognition of secondary lines of resistance as a realistic method of thwarting Communist interrogation and exploitation. Additionally, the instruction in secondary lines of resistance must be included as an integral part of any resistance training program in support of the Code.

C35. (S) TANKS IN THE 1973 MIDDLE EAST WAR: WHICH STUDY TO BELIEVE? (U), by Major Benjamin Davidson Taylor, USA, 157 p.

(U) This paper is an evaluation of twelve studies (eleven classified, one unclassified) of the 1973 Middle East War to determine the conclusions drawn concerning the tank and its employment and performance during that war.

Common findings of the selected studies were sought in training (individual, crew, and unit), doctrine (organization, tactics, techniques, and procedures), and material (strengths and weaknesses). Documentation (source, coverage, limitations, and treatment of data) was also evaluated to determine the usefulness of the studies in the analysi of the above areas.

(U) From the synthesis of the studies, major issues were identified for the tank as follows: Individual and crew training, combined arms teams employment, the tank versus the antitank guided missile, turret vulnerabilities of United States tanks, and cupola deficiencies. Supplemental issues were identified for unit training, training simulators, equipment training, techniques and procedures, tactics, organization, T-62 tank vulnerabilities, APDS ammunition, track shrouds and outside hardware, and external fuel cells. Classified findings, conclusions, and recommendations are presented for the major and supplemental issues.

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APPENDIX

MISCELLANEOUS ENTRIES

THE COMMAND AND GENERAL STAFF COLLEGE IN TRANSITION, 1946-1976, by Major Robert A. Doughty, USA, 141 p. (ADA 030436)

This study attempts to analyze the changes occurring in the curriculum of the Command and General Staff College, Fort Leavenworth, Kansas from 1946-1976. The greatest emphasis in the study is placed on the period from 1972-1976.

The study concludes that the College has experienced a number of changes in its curriculum. These changes have centered on the relationship between education and training, the balancing of the generalist versus the specialist, and the broadening of the scope of instruction.

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