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Murane, David M., Major, USAF

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The thesis that air operations at night are evolving as doctrinal employment of air power for counterinsurgency is founded basically on the history of night air operations in Vietnam during the period 1962 through 1964. It became evident in 1962 that the developing pattern of conflict in Vietnam was a repetition of the insurgency/counterinsurgency experiences of other countries in previous times. Without regard to other factors, it was apparent that, militarily, history was repeating itself in Southeast Asia. Insurgent activity was largely night oriented, and the counterinsurgent was ill-prepared to conduct effective ground or air operations against the illusive night-fighting guerrilla. During 1963, night air operations developed rapidly and the tools, tactics, and techniques which were to bring significant results during 1964 were developed. A statistical analysis of the air operations during 1964 illustrates beyond doubt that the employment of air power at night was evolving as a normal, and in fact desirable utilization of this combat capability. The use of air power at night is evolving and will continue to evolve as doctrine for unconventional warfare.

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NIGHT AIR OPERATIONS IN VIETNAM;
AN EVOLVING DOCTRINE FOR COUNTERINSURGENCY (U)

An abstract for a thesis presented to the Faculty of the U. S. Army Command and General Staff College in partial fulfillment of the requirements of the degree

MASTER OF MILITARY ART AND SCIENCE

by

DAVID M. MURANE, Major, USAF

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Fort Leavenworth, Kansas
1965

U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE

Name of Candidate David M. Murane, Major, USAF

Title of Thesis NIGHT AIR OPERATIONS IN VIETNAM; AN EVOLVING DOCTRINE FOR COUNTERINSURGENCY (U)

Approved for Publication by:

_____, Research and Thesis Monitor

_____, Member, Graduate Faculty

_____, Member, Graduate Faculty

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The opinions and conclusions expressed herein are those of the individual student author and do not necessarily represent the views of either the United States Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

The thesis that air operations at night are evolving as doctrinal employment of air power for counterinsurgency is founded basically on the history of night air operations in Vietnam during the period 1962 through 1964.

It became evident early in 1962 that the developing pattern of conflict in Vietnam was a repetition of the insurgency/counterinsurgency experiences of other countries in previous times. Without regard to other factors, it was apparent that, militarily, history was repeating itself in Southeast Asia. Insurgent activity was largely night oriented, and the counterinsurgent was ill-prepared to conduct effective ground or air operations against the illusive night-fighting guerrilla.

Although the insurgent commonly exploits night for his terrorist activities, he does this not by choice but of necessity. An examination of basic factors and problems inherent in night military operations reveals the significant disadvantages which face both the insurgent and the counterinsurgent. The simple inability to see in the dark and the resultant effect of complicating movement and control, increasing susceptibility to injury and fatigue, and prolonging the time which it takes to perform a military maneuver--these are the problems faced by the military man at night, regardless of his mission and irrespective of the environment in which he fights. Night is no less an enemy to soldiers on the ground than it is to airmen in the sky.

Night, however, if examined as a potential ally, offers an environment which, when properly exploited, can be of tremendous value to both

the insurgent and the counterinsurgent.

In Vietnam, this exploitation was practiced from the beginning by the Viet Cong with ever increasing success. The Factors of cover, concealment, secrecy, and surprise were utilized with devastating effectiveness by the Viet Cong in their mission of expanding communism into the Republic of South Vietnam.

In response to the increasing enemy threat during the hours of darkness, the South Vietnamese and their American advisors began in mid-1962 to develop a capability to neutralize and eventually defeat the insurgents by shifting emphasis to counterinsurgent operations at night, both on the ground and in the air.

From an inauspicious beginning in which the primary weapon and deterrent was the flareship, night air and ground operations expanded to include flareship-fighter strike teams and specially trained small unit ground forces meeting the Viet Cong in the environment which they (the Viet Cong) had chosen to exploit.

During 1963, night air operations developed rapidly and the tools, tactics, and techniques which were to bring significant results in 1964 were developed. A statistical analysis of the air operations during 1964 illustrates beyond doubt that the employment of air power at night was evolving as a normal and, in fact, desirable utilization of this potent combat capability.

The trends point unmistakably to a full realization of the part which airborne weapons and personnel can play in counterinsurgency when employed at night.

During this same period, many tests and experiments were conducted in Vietnam to improve our night air capability, and tactics, techniques, and equipment used in other counterinsurgency wars were examined, to be

used or discarded as dictated by the peculiarities of the Vietnamese battlefield.

The value of using the night as a means to reduce the vulnerability of aircraft to an increasing Viet Cong antiaircraft capability was recognized and more and more ground and air operations were conducted in the newly emerging friendly environment of darkness.

The evolution of night air operations in Vietnam occurred with relative celerity as both Army and Air Force men became aware of the potential advantages inherent in employing aircraft in support of offensive as well as defensive operations on the ground. An indication of this awareness has been manifested in increasing emphasis on the part of all the services on the use of air power at night.

In Counterinsurgency warfare in the future, lessons learned in Vietnam, if remembered and if exploited, will serve as a doctrinal basis for immediate employment of night air operations as one of the most important and most lucrative methods of defeating insurgent forces.

The use of air power at night is evolving and will continue to evolve as doctrine for unconventional warfare with the objective and ultimate result of providing a credible deterrent to communist insurgency. This deterrent is based on the capability to conduct effective military operations '<u>round the clock</u>, utilizing balanced air and ground forces to defeat insurgency anywhere in the world.

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NIGHT AIR OPERATIONS IN VIETNAM; AN EVOLVING DOCTRINE FOR COUNTERINSURGENCY (U)

A thesis presented to the Faculty of the U. S. Army Command and General Staff College in partial fulfillment of the requirements of the degree

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INTRODUCTION

Uncounted words have been spoken and recorded, written and published by uncounted experts and pseudo-experts on the subject of Vietnam. The country, the climate, the people, the politics, the implications and complications, solutions and salvations--these and many others have been topics for lengthy discussion and debate. It was therefore, with some reluctance, that the author approached an admittedly arduous task which would add to this already ponderous collection of biased and unbiased opinion, fact, fiction, and fantasy. The reluctance was also due to anticipated, and since confirmed, difficulty in extracting one part of the problem in Vietnam from the general enigma. And in Vietnam, interrelation of specific problems in particularly characteristic of the whole conundrum. It is almost impossible to discuss a Vietnamese military problem without reference to the political structure which fosters that problem. It is equally difficult to discuss night air operations without considerable attention to both ground and air operations in general, and again, the relationship of ground and air operations to the overall military and paramilitary effort. However, as is often the case, motivation to examine in detail, and perhaps solve a part of a heretofore insolvable riddle transcends reluctance. In this instance a personal experience provided additional incentive.

To set the stage for this thesis and to establish the author's claim to "expert" status, we return to February 1962. It was during

this month that ten hastily trained air operations officers arrived in South Vietnam to take over, on a permanent party basis, operations of the newly organized Tactical Air Control System (TACS). Duty for the next twelve months was in Pleiku, a small town located in the Central Highlands, 210 miles northeast of Saigon. Headquarters for the Army of Viet Nam (ARVN) II Corps, it was also headquarters for one of the three Air Support Operations Centers (ASOC), which, with the Joint Operations Center (JOC) at Saigon and associated radar stations, made up the TACS in Vietnam. As a Close Air Support Duty Officer (CASDO) in Second ASOC, the author was an advisor to the Viet Nam Air Force (VNAF) officers assigned there on all matters pertaining to employment of available VNAF/USAF air effort.

The ensuing year was, for the most part, a study in frustration. Not enough airplanes, not enough pilots, not enough anything. We were able to accomplish what we did during that austere period (and in retrospect it seems precious little), only by dogged determination and unlimited patience. It was in this environment that the thesis motivating personal experience occurred.

From the beginning of the tour in Vietnam, the most frustrating experiences were associated with Viet Cong (VC) attacks on villages, hamlets, and outposts during the hours of darkness. In the majority of cases, word of an attack was not received until the next day, and in some instances, several days had passed before a report filtered up through the ponderous civil/military chain of command. A great amount of time, effort, and resources was expended by MAAG, Special Forces, the United States Overseas Mission (USOM) personnel in attempts to provide these isolated spots of humanity with a means to call for help when the inevitable attack came. As these efforts began to bear fruit

and the "fire alarm" system expanded, it became painfully evident that an alarm system in itself was of little value if the "fire horse" balked in the barn. At that time (the summer months of 1962), ARVN troops were reluctant to venture forth at night on a rescue mission, and due to lack of training the VNAF capability to perform night air operations was very limited. U. S. Air Force night air capability was also restricted due, primarily, to lack of aircraft. Recognizing this defensive weakness, U. S. advisors had been applying pressure to ARVN and VNAF commanders in an attempt to provide some sort of night "fire fighting" force. Specific actions taken by the ARVN in this respect are not known but it is significant to note that as of the end of 1964, Military Assistance Command, Vietnam (MACV) weekly Military Reports (MILREPS) still contain repeated instances of ARVN reinforcements waiting until dawn to go to the aid of an outpost or village which had undergone a night attack. The VNAF was also slow in responding to the need. Early in the summer of 1962, the 1st Air Commando Squadron (USAF), at Bien Hoa Airfield, had developed a capability to drop parachute flares from SC-47 aircraft. They were subsequently put on ground alert by the JOC. Their mission was to support beleagured outposts with flare illumination. The VNAF followed suit during August with C-47 flareships on alert at Tan Son Nhut Airfield in Saigon. There had been several instances during June and July when flareships alone had caused the Viet Cong to break off an attack, and both VNAF and USAF commanders were anxious to exploit this new capability. This was more of a "fire-fly" force than a "fire-fight" force, however, it was, at least at that time, proving to be effective. At about the same time (the first week in September), the 22d Division (ARVN), at Kontum (40 kilometers north of Pleiku), reported that reliable intelligence sources

were predicting a large scale attack on ARVN military installations in the Kontum area. On the basis of these reports, II Corps requested, through the ASOC, that a flare aircraft be placed on ground alert at Pleiku Airfield. There was a great deal of haggling on the unpredictable and unreliable TROPOSCATER telephone between VNAF officers at II ASOC and VNAF officers at the JOC before the request for flareship was approved (Pleiku was considered hardship duty by the Vietnamese, as is any place outside of Saigon). However, late the next day, a VNAF C-47 manned by a Vietnamese pilot and an American co-pilot arrived at Pleiku with a load of parachute flares and the people necessary to throw them out the door. The American co-pilot reported to the ASOC where he was briefed on local flying conditions and possible targets which they might be called upon to illuminate. the VNAF pilot disappeared after landing and couldn't be located (he may be lost to this day). A new runway had only recently been completed at Pleiku, and the runway lighting system was not operational due to electrical power problems. However, the chief of the MAAG Airbase Advisory Team (ABAT) had secured sufficient battery powered portable lights to assure a safe night take-off and landing. Secure in the knowledge that Kontum was certainly in good hands tonight, everyone slept a little easier. It, therefore, was only mildly annoying to be awakened at midnight by a call from the Corps Tactical Operations Center (CTOC) duty officer advising us that a village was under attack and that our help was needed. The C-47 co-pilot was awakened, and together we went to the ASOC. The ASOC Director (an unforgettable VNAF Captain) met us at the door with the words, "Will you please call Bien Hoa and ask them to send a flareship?" The ensuing repartee, if not under such tragic circumstances, would certainly have qualified as high humor.

It was finally resolved that the VNAF C-47 pilot, who could not be found, was not qualified to fly at night anyway, and the portable runway lights were not considered adequate by the VNAF ASOC Director. The American co-pilot offered to perform the mission without the VNAF pilot, but the ASOC Director would not permit him to fly the VNAF C-47. When it became obvious that our local flareship illumination capability had been only "eyewash," we did, in fact, call Bien Hoa, and one hour and forty-five minutes later a USAF SC-47 dropped its first flare over the village of Plei Mrong. During that one hour and forty-five minutes wait, over ninety people lost their lives. The Special Forces Team which normally occupied the village had gone on night patrol with the bulk of the self defense force, and the VC, in typical fashion, had attacked the defenseless force that remained.

In retrospect, it is not possible to emphatically conclude that a more rapid response by a flareship alone would have made a difference in the eventual outcome; but at that stage in the war, probability is great that it would have.

We have cited only one instance. One which was particularly stark however, in its impact. There were others, less vivid individually, but together forming a memory of futility and lack of preparedness to fight the battle at night, whether on the ground or in the air. An enemy that moves at night and fights at night must be counter-moved and counter-fought at night. This realization has been all too slow in coming, and to this day is not receiving the emphasis which it must have if we are to retain some hope of defeating communist insurgent forces in South Vietnam and on guerrilla battlefields of the future. Night air operations will play an increasing role in these battles by virtue of their inherent mobility and firepower, but firm doctrine and

finite tactics and techniques must be developed before the full impact of night air operations can be brought to bear. It is to this end that this thesis is directed.

CHAPTER I

NIGHT, THE IMPARTIAL ENEMY

As a prerequisite to examination of factors which indicate evolving doctrine in the field of night air operations, it is necessary to examine some of the basic physical and psychological factors which affect any military activity at night. It is important to recognize that natural hazards associated with operations in darkness apply equally to foe as well as to friend. No human is immune to physical consequences which result when the ability to see is either hindered or completely obstructed. Night, therefore, is the universal enemy, the impartial enemy.

On the Ground

Although the United States Army considers that movement, attack, exploitation, and defense at night are routine operations, the Army also recognizes the fact that night combat is characterized by a decrease in the effectiveness of aimed fire.[1] The primary handicap of combat at night is reduction in ability to see. Without light, when the blackness of a moonless, starless night descends on a soldier in the field, he becomes a less useful tool in the hands of his leader. No matter the power of the weapon he carries, its unaimed might cannot

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[1]U. S. Department of the Army Field Manual 61-100, The Division (Washington, D. C.: U. S. Department of the Army, Jan 1962 and Change 1, 27 Mar 63), p. 119.

bring victory. This inability to see, manifests itself in at least five elements which influence, and normally degrade, the ground soldier's capability to perform his mission. These factors are the psychological impact of darkness, impaired mobility, susceptibility to injury, tension and fatigue, and time prolongation per task.

Although the psychological impact of darkness may vary with the ethnic, social, and physical environment which fostered his growth, each man, to some degree, is afraid when he must rely on feel instead of sight to find his way. Morale of troops both friendly and enemy is highly sensitive to physical and psychological factors.[2] Unidentified sounds are magnified and take on ominous and perilous meanings. Silent movement, which is so often an enforced requirement of night movement, serves to heighten tension and anxiety. Emotionally the average soldier on a blacked-out battlefield walks a fine line between severe apprehension and panic; a condition which can be miraculously alleviated by addition of just a pinpoint of sight and sense orienting light. There is a "tremendous morale factor inherent in being able to see at night."[3]

Individual movement and mass mobility suffer together under conditions of darkness. The slow measure step of the foot soldier, egg shell walking his way through the jungle, or the balcked-out column of vehicles snaking their way turtle-like down a hostile road

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[2] Ibid

[3] U. S. Army Command and General Staff College, "Battlefield Illumination Study," Informal Study: Operational Doctrine for Employment of Battlefield Illumination during the period 1960-1970 (Fort Leavenworth, Kansas: U. S. Army Command and General Staff College, 10 Feb 60), p. 7.

are the penalties of movement at night--penalties which infrared, image intensification devices, and luminescent paints can only partially attenuate. Without visible light, all of the basic employments of ground military forces cease or are seriously hindered. Penetration, encirclement, pursuit, exploitation; all become impossible or impractical when men cannot see. United States Army Field Manuals include numerous references to problems of night movement and, more specifically, night jungle movement.

> Effective movement and control at night is predicated on prior reconnaissance, stealth and silence in moving, close physical contact between individuals, and maximum use of navigational aids (compass, luminous disks and jungle matter, white material attached to equipment, use of engineer tape and/or telephone wire). In a tactical movement, a commander must insure slow movement, close formation, frequent halts to check formation and number of men, and use of spacing and the compass.[4]

> Night marches are characterized by closed formations, more difficult control and reconnaissance, and slower rate of march. . . . Difficulty of control requires more detailed planning; stringent control measures; thorough training; and enforcement of march, light, and communication discipline.[5]

> Time and space factors are carefully considered when planning the raid operation. Sufficient time is allowed for assembly and movement, particularly during darkness.[6]

> Ambushes conducted during periods of low visibility offer a wider choice of positions and better opportunities to surprise and confuse the enemy than daylight ambushes. However, control and movement to and during night ambush is more difficult.[7]

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[4]U. S. Department of the Army Field Manual 31-30, Jungle Operations (Washington, D. C.: U. S. Department of the Army, Oct 60), pp. 70-71.

[5]U. S. Department of the Army Field Manual 21-18, Foot Marches (Washington, D. C.: U. S. Department of the Army, Nov 62), p. 4.

[6]U. S. Department of the Army Field Manual 31-21, Guerrilla Warfare and Special Forces Operations (Washington, D. C.: U. S. Department of the Army, Sep 61), p. 116.

[7]Ibid., p. 124.

The Senior advisor to the ARVN 25th Infantry Division made this observation in a discussion of Viet Cong movement tactics:

> VC conduct combat operations at night and the last phase of movement to combat at night. However, in 'safe' areas, VC move during both day and night. Jungles and mountain trails are difficult to navigate at any time especially at night.[8]

In consideration of the peculiar problems associated with jungle movement it is also important to recognize that "jungle terrain presents the same advantages and disadvantages to the enemy as it does the friendly forces."[9]

Hand in hand with the problem of night movement goes an increased susceptibility to injury. Each year in the United States, thousands of people injure themselves while attempting to navigate darkened stairways in the familiar surroundings of their own homes. Transfer implications of this familiar hazard to the untraveled and unfriendly terrain of a night battlefield, particularly a forested or jungle battlefield, and predictable casualties become a major planning consideration. The sprained ankle, a twisted knee, the brush-torn face and bleeding shin bone: individually, minor problems, but collectively, they spell the difference between a fully effective combat force and one which may wither under minor adversity when the battle is joined. Accidental injury and death due to non-combat causes will always plague the military commander. Therefore, it is with some reservation that a military leader accepts the certain increases in non-combat casualties

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[8]Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, "Evaluation of Test Results of the Employment of OV-1 (Mohawk) Aircraft in Support of Counterinsurgency Operations" (Saigon, Vietnam: Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, 19 Jul 63), Annex 7, p. 3.

[9]FM 31-30, op. cit., p. 68.

associated with night operations. Factors which dictate his decision to fight at night must override expected loss of combat power due to injuries incurred in movement to the place of battle.

Fatigue is a product of all military movement whether it be by foot or vehicle. Night movement, with its added psychological and physical hazards is even more fatiguing; and when a streaming jungle environment is added to the picture, fatigue become a major consideration.

> The execution of a raid that will require a deep penetration into the jungle will be affected by the physical endurance required of the men to traverse the jungle terrain.[10]
>
> To get troops to the proper place at the proper time in condition to successfully accomplish the mission requires the utmost in ingenuity and leadership of the commander.[11]
>
> The heat and humidity are factors which will affect every march to an unpredictable extent.[12]
>
> The extreme fatigue resulting from jungle marching is apt to cause soldiers to neglect to wash their clothes and bodies even though they have been told their health depends on cleanliness.[13]

Again, these are but a few of many references contained in United States Army Field Manuals which allude to the problem of physical fatigue. This problem is closely related to the previously discussed psychological problem. Performance of the simplest task under conditions of fear or anxiety, particularly when bodily injury is an ever-present possibility, is a debilitating, energy consuming strain. From personal experience, it is not uncommon for an all-weather interceptor pilot, on a night low-level intercept mission far at sea, to

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[10] Ibid., p. 67.

[11] Ibid., p. 38.

[12] Ibid.

[13] Ibid., p. 122

lose several pounds in an hours flight. This, under conditions of very little actual physical activity. Mental fatigue problems of a man carrying a back pack through jungle at night, with every step the prelude to a foot trap, booby trap grenade, or land mine, are even more critical. Compound this problem with the ofttimes enemy enforced sleeplessness of daylight hours, and man soon reaches the limit of endurance. There were many in Vietnam who ridiculed use of supersonic aircraft for sonic booming Viet Cong jungle bases. But if the enemy moves and fights at night he must sleep during the day, and there are few weapons as cheap as the sleep-disturbing sound of a sonic boom. Supersonic flight for short periods should be part of every daytime training or combat mission flown by jet aircraft over VC dominated portions of South Vietnam.

Time is the final factor considered in our discussion of night operations on the ground; and perhaps this is the most important of all the factors. It is possible to predict with some degree of accuracy the time it will take a man or a group of men to perform a given task during daylight. With intensive training, there are tasks which men can do blindfolded with almost as much efficiency as with open eyes. However, the large majority of tasks which a military man must perform in the discharge of his everyday duties, normally will take a longer period of time under conditions of darkness. This prolongation of time per task is a difficult thing to predict. It will vary with each task, being partially dependent on the number of other individuals who are involved, and on the degree to which these other individuals are involved with still another set of tasks. Because this thesis is oriented on the problem of night counterinsurgency operations

in Vietnam, and in cognizance of the jungle environment which characterizes a large part of that conflict, it is disturbing to note the lack of specific planning factors guidance in United States Army Field Manuals on the subject of movement of guerrilla or counterguerrilla land forces at night. Generalities are the rule. FM 31-30, Jungle Operations, says, "do not attempt to travel at night unless necessary."[14] "Movement in the jungle is calculated in terms of time rather than distance."[15] "Night movement is characterized by slow and deliberate progress and it requires detailed planning."[16] "In the jungle, time factors will be increased and space factors decreased."[17] Field Manual 21-18, Foot Marches, has this to say: "Because of the difficulties caused by reduced visibility and less effective control and coordination procedures, the rate of march is reduced over that normally prescribed for day marches."[18] "Movement in many areas of the world, must be calculated in terms of time rather than distance. The problem is how long it will take to get from one place to the other rather than how many kilometers it is between places. This is especially applicable in northern, mountain, or jungle areas [underlining mine] where trails are either limited or nonexistent, and cross-country movement may be slow and difficult."[19]

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[14] Ibid., p. 33.

[15] Ibid., p. 37.

[16] Ibid., p. 42.

[17] Ibid., p. 50.

[18] FM 21-18, op. cit., p. 19.

[19] Ibid., p. 6.

Perhaps it suffices to say that time is a problem and make no attempt to define how much of a problem, however, it is hoped that experience being gained by United States personnel in the jungles of Vietnam will be exploited more fully in future Army publications dealing with night ground operations in that type of environment.

We have covered briefly the more important military aspects (primarily limitations) of night operations on the ground. Now, let us examine these factors and others which have a peculiar relationship to operations in the air, and which serve to limit or hinder the airman's capabilities during darkness.

In the Air

> The first long-range strategic strike in history came in November 1914, when the British daringly sent three Avro 504's to bomb the Zeppelin sheds at Friedrichshafen, on Lake Constance in southern Germany. Little damage was done to the Zeppelin base and one of the British planes was downed, but the surprised Germans retaliated by forming a bombing squadron which they called the 'Ostend Carrier Pigeons.' By January, 1915, they were raiding Dunkirk, France, behind the Allied line, flying in formation and--surprisingly--flying at night.[20]

"Surprisingly--flying at night." Why surprisingly? It is sometimes assumed, and perhaps rightly so, that doing anything at night which can be done during daytime (except sleeping) is really quite unusual, unnatural, and unnecessary. Therefore it is really not surprising to see the "surprising" reaction to night flying, and particularly so when this flying included the act of dropping bombs on people. However, since man is the unconventional mechanism that he is, there was a certain inevitability to flight at night and subsequent use of the dark night sky to cloak operations of military aviators. But what

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[20]Alvin M. Josephy, Jr. et al., The American Heritage History of Flight (New York: American Heritage Publishing Co., Inc., 1962), p. 161.

[redacted]

are some of the factors which make night an impartial enemy to pilots as well as to ground-bound soldiers?

There are psychological, physiological, mechanical, and natural phenomena which act to the detriment of a pilot at night.

We have touched briefly on psychological effects of night flight. A more detailed investigation reveals several additional psychological derivatives of flight in darkness. Leaving the firm and familiar environment of the ground for the unknown and unseeable atmosphere of a black night may forever have something of an unsettling effect on most men. The ability to orient oneself to nothing more tangible than the suspect needles of several dimly lit instrument dials establishes a tenuously balanced mental condition which extensive training can only partially assuage. Although difficult to establish statistically, it is the author's firm belief that the average pilot approaches night flying with somewhat less enthusiasm than he does day flying. The psychological barrier of darkness is an inborn and deeply rooted influence in the minds of men, and regardless of demands of the man on the ground who needs night air support, pilots are only men. Speed and darkness are also strange bedfellows. The knowledge that you may be rushing headlong toward some other animate object, hidden in the darkness but no less disastrous in its collision effect, serves to keep ones attention and concentration at an extremely high level and reduces to some unmeasured degree ones combat effectiveness.

Pilots who participated in a suitability test in 1954 to determine a fighter-bomber squadron's capability for night tactical air operations were unanimous in their appreciation of moonlight and/or artificial

light to assist them in performing their night missions.[21] This appreciation can be attributed to more than improvement in target acquisition and ordnance delivery capabilities. It was also undoubtedly due to the simple ability to see where they were going.

There are several physiological characteristics of man which tend to reduce his capability to function efficiently at night in the air. These characteristics also affect man during day flying but to a lesser degree. The first and most important is vision. Without becoming overly technical, it will suffice to say that visual acuity is reduced in direct proportion to the amount of light which enters the eye. Ability to distinguish detailed features of an object at a given distance decreases as light on that object is reduced. As ability to distinguish detail diminishes so does ability to determine distance to the object. Depth perception is therefore a correlative of available light.[22] Loss of depth perception is one of the effects which a pilot experiences at night and which affects his combat capability. Another effect which, particularly in a combat environment, can derogate a night-flyer's capability, is loss of dark adaptation. Once the eye becomes adjusted to darkness it does a relatively good job of seeing, even under conditions of extreme light reduction. However, sudden exposure of the eye to bright light can instantly destroy this adaptation with resultant reduction and, in extreme cases, complete loss of ability to see at night. A pilot's visual orientation on a

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[21]Air Proving Ground Command, "Final Report on the Operational Suitability Test of a Fighter-Bomber Squadron for Night Tactical Air Attack," Project No. APG/TAT/128-A (Eglin Air Force Base, Florida: Air Proving Ground Command, 27 Dec 54), p. 19.

[22]S. L. Poyak, M.D., "Eye, Human," Encyclopaedia Britannica, 14th ed. (1954), IX, 5-8.

burning target at night reduces his dark adaptation to the extent that he must resort to instrument flying when he passes beyond the light emanating from the fire. This transition from contact to instrument flying is a breeding ground for a third physiological effect on the night pilot, i.e., "vertigo." Vertigo is caused by false signals generated in the inner ear which lead a pilot to believe his aircraft is in an attitude other than its actual attitude. Without a visual form of reference, reaction to the false signal can cause a pilot to fly his aircraft into a position from which he may be unable to recover. This is particularly hazardous on a night close support mission at low altitudes. There are, of course, other physiological effects which, under certain conditions, may degrade a pilots capability at night, such as carbon monoxide poisoning or lack of oxygen, either of which reduce the ability to see. Loss of color vision which occurs under conditions of reduced light also contributes to a reduction in target acquisition facility. Taken as a group, the physiological characteristics of man in a night flying environment are definitely a degrading factor, but not to the extent that man cannot effectively perform a variety of night combat missions.

Mechanical problems encountered in night air operations could perhaps be more aptly described as support and tactical problems. Aircraft which fly at night frequently must be serviced at night, loaded with ordnance at night, and, in many cases, maintenance must be performed at night. Cockpit instruments and instrument lights plus navigation and landing lights take on a new importance for both pilots and maintenance and supply people. In this regard, factors which affect army night operations on the ground apply equally to ground support

elements of air forces. It takes more time to do things at night. The hazards of loading ammunition are greater at night. Maintenance areas must be lighted. More people are injured on the flightline at night. Runway and ramp lights and navigational aids must be maintained in peak condition. In addition to these purely physical and technical problems on the ground, a pilot is faced with certain tactical problems in flight which could be defined as mechanical in nature. The mechanics of flying formation at night are somewhat different than during daytime. Formation join-up and separation during the attack are maneuvers which pilots do routinely during daylight. At night, however, special briefing and, of more importance, special training and psychological adaptation is required if these maneuvers are to be performed with confidence and safety.

As a prelude to the suitability test mentioned previously, Air Proving Ground Command conducted a test project to determine tactics and techniques for night tactical air attack. In the collective analysis of this project it was concluded that "psychological adaptation of the day fighter pilot to night operations was the most important of the problems encountered."[23] Twenty hours of intensive night training was considered a minimum for this adaptation.[24] The test project conclusions were stated as follows (each of these conclusions, with the exception of "b" have mechanical implications):

a. That pilots are thoroughly trained and indoctrinated prior to attempting to perform night tactical air attack operations.

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[23]Air Proving Ground Command, "Final Report on Fighter-Bomber Tactics and Techniques for Night Tactical Air Attack," Project No. APG/TAT/22-A-8 (Eglin Air Force Base, Florida: Air Proving Ground Command, 1 Jul 54), p. 20.

[24]Ibid., p. 21.

b. That weather and visibility conditions are not too adverse.
c. That some means for illuminating the target is provided.
d. That suitable means and procedures exist for navigation, tactical control, and recovery for fighter-bomber type aircraft.
e. That steps are taken to improve the cockpit lighting so that pilot's visibility from the aircraft may be more efficient.[25]

The mechanical problems of night air operations are unavoidable. Nevertheless, they constitute one aspect of the battle with our enemy, night, in which we can be assured of partial victory through the medium of training, research, and development.

A final factor or phenomena considered as having a detrimental effect on night air operations concerns those "natural" aspects of night which create problems for a pilot. These are simply manifestations of a pilot's inability to see, and therefore, could be classified as physiological in nature. However, it is in consideration of the long-range implications of reduced visibility that we examine the problem. Night plays its most important role as adversary of airmen by hiding and disguising targets which during the day are easily distinguishable by shade and shadow contrasts. When night lays its mantle of darkness over the land, the only contrast visible to a pilot's unaided eye is provided by man-made points of fire-light against the black background of the earth or the heavenly points of starlight against the blackness of the sky. On a clear night these points of light often merge at the horizon to give a pilot an "inside-of-the-fishbowl" feeling and the beginnings of vertigo. To locate a target area on a night such as this without some aid from an external source is, at the outset, a difficult task. To positively identify a point target within that area without aid of some form of artificial or natural illumination is next to impossible: to attempt accurate delivery of

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[25] Ibid., p. 8.

ordnance on that target under such conditions is folly. Add the efforts of a military target to further camouflage itself by taking advantage of the deepest ravine and the most impenetrable forest, and the handicap of darkness becomes insurmountable to a searching pilot. The final report of the Army/Air Force Close Air Support Board painted a slightly more optimistic picture.

> A well trained and highly disciplined enemy can, by use of various tactics, make it extremely difficult to spot small number of personnel on the ground from an aircraft at night . . . It can be expected that the greatest degradation at night will be in the inability to acquire personnel targets.[26]

It is also significant to note the Board's conclusion that "tests and operational experience have shown that night delivery accuracy is not significantly degraded provided the pilot can acquire the target."[27] The overall degradation of night close air support is due primarily to problems in target acquisition. The figures quoted in the Board report reflected a 30 per cent reduction in target acquisition capability at night, versus a 10 per cent degradation during daylight.[28] However, these figures appear overly optimistic when cast in the environment in which flareship and night strike pilots have found themselves in Vietnam during the past two years.

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[26]U. S. Army - U. S. Air Force Close Air Support Boards, "Joint Final Report U. S. Army - U. S. Air Force Close Air Support Boards" (Fort George G. Meade, Maryland: Office of the Adjutant General, Headquarters Second United States Army, Initial Edition, Vol. IV, Aug 63), Tab S to App. 3 to Annex F.

[27]*Ibid.*, App. 3 to Annex F, p. 8.

[28]*Ibid.*, Tab S, App. 3, Annex F.

In Vietnam

Early in 1962, the one aspect of the military effort in Vietnam which made the greatest impression on newly arrived American Army and Air Force advisors was the "banking-hours" approach which the Vietnamese took toward fighting communist insurgents. From 0800 until noon and from 1500 until 1700 the counterpart program functioned as well as could be expected considering language problems. However, during the three hour afternoon siesta period, and the remaining hours of the day and night, advisors could only give advice to each other and hope that the Viet Cong would oblige by forestalling aggression until the ARVN was on duty and the VNAF was ready to fly. Patterns of Vietnamese activity born of eight years battle with the insurgents were difficult to change; and, in fact, after three years exposure to the animated and sometimes overanxious American advisor, these patterns, to a large extent, still remain. The Philippines' Reserve Officers Legion, in commenting on the status of the war in Vietnam and the increasing Asian involvement, was quoted by the Baltimore Sun on 15 December 1964 as saying:

> It is also quite evident, that the rush-rush-rush nature of the American way of doing things simply is far out of mesh with the slow and deliberate Asian way of getting things done.[29]

The regular Republic of Vietnam Armed Forces (RVNAF) soldier or airman has demonstrated a not too abnormal reaction to battle at night, i.e., avoid it if possible. General Guenther Blumentritt made this observation:

> It is interesting to note in the 'history of night battles' that well disciplined, regular troops have always been very reluctant to expose themselves to the hazards of darkness, while on the

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[29]Associated Press News Release, "Fillipinos For Backing Their Viet Forces," Baltimore Sun, 15 Dec 64.

other hand, less civilized nations and those taking part in 'illegal warfare' actually welcomed night as their ally. Colonial, Indian, and similar wars prove this statement, and it is due to this fact that in these semi-civilized wars the well-organized, regular troops were often wiped out by the irregulars and the 'close-to-nature' fighters.[30]

Anyone who has been directly exposed to the war in Vietnam cannot, with honesty, say that there has been any significant effort made by the Government of Viet Nam (GVN) toward changing the pattern of conflict to meet the enemy on his own ground. Battle tactics have changed to some degree, and mobility has certainly been emphasized almost ad nauseam, but the fundamental approach to the problem of meeting the enemy with appropriate forces and weapons on terrain of our choosing <u>and at a time of our choosing</u> has been either ignored or enjoyed only token consideration by Vietnamese military leaders. The limited night capability of the RVNAF has been utilized almost exclusively in a reaction role.

We must also admit that the American Army and Air Force advisors cannot be completely exonerated from responsibility for the lack of emphasis on night operations. We too, fall into the category of "well disciplined, regular troops who are reluctant to fight at night." The unending parade of daytime "clear and hold" and "search and destroy" operations involving massive numbers of helicopters and armored personnel carriers with barrages of supporting artillery, too often yield very little, if any, results and are typical of the "big war" thinking and planning which seems to permeate this "little war" theatre.

Although we recognize that the apparent tenor of the war is

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[30]Guenther Blumentritt, General der Infanterie a.D., "Operations in Darkness and Smoke," Manuscript No. B-683, Trans. A. Schroeder, Ed. H. Hertman, Originally prepared by Historical Division European Command, Foreign Military Studies Branch (Washington, D. C.: Office of the Chief of Military History, Department of the Army, 1952), p. 3.

now slowly beginning to develop along more conventional lines, it is indeed unfortunate that proper emphasis on unconventional tactics was not applied in the beginning. Results of such emphasis might well have prevented, or at least curtailed, the escalation which has taken place during the final months of 1964 and early months of 1965.

Although night is purportedly an impartial enemy to both friend and foe, in Vietnam, night has been a partial enemy to the GVN forces, primarily due to their unwillingness to accept night as a normal and, in fact, a desirable battle environment, and to conduct their operations accordingly. The rain-forests and flooded rice paddies of Vietnam present obstacles to night operations which should not be minimized in their impact; and the problem of visually acquiring and attacking the typical Viet Cong ambush or patrol party from the air at night is certainly complicated by the peculiar environment with which we are faced in that country. However, this is the environment and these are the conditions with which we may be faced in still unnamed countries for generations to come. Night must cease to be an enemy. Night must become the ally.

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CHAPTER II

NIGHT, THE ALLY EXPLOITED

Evidence which supports the thesis that "night is an enemy," is interestingly ambiguous. Factors which have a detrimental effect on military operations at night may also be applied to favor these operations and, in fact, the body of military history aligns itself more strongly behind night as a military ally than it does the converse. We therefore turn to documentation of the opposite thesis, "night, the ally," and to a discussion of its exploitation.

On the Ground

What are factors which favor the use of darkness as an ally to a soldier on the ground? Cover, concealment, secrecy, and surprise are among the more obvious elements. Less obvious, but not of less importance as factors, particularly in the jungle, are temperature and humidity.

The Dictionary of United States Army Terms defines cover as "shelter or protection, either natural or artificial. See also concealment."[1] Concealment is defined as "the protection from observation only. See also cover."[2] These two terms are basically synonymous, and in a discussion of night operations their meanings become

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[1]Headquarters, Department of the Army, Army Regulation 320-5, Dictionary of United States Army Terms (Washington, D. C.: Headquarters, Department of the Army, 28 Feb 63), p. 104.

[2]Ibid., p. 116.

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even more closely related. The natural shelter or protection afforded by darkness is a consequence of restricted observation. An infantry or tank platoon deployed on open terrain is sheltered and protected by the concealment of darkness just as effectively as if under cover of bunkers or heavy foliage. If we combine the artificial cover of bunkers and the natural cover of heavy foliage with the added concealment inherent in darkness, the overall benefits accruing to a military force present a significant advantage. Under "cover" of darkness--an interesting cliche in view of this discussion--a foot soldier or tank commander acquires freedom of action in and around his artificial or natural cover; a freedom that permits activity which is impossible or at best extremely risky during daylight. Minefields can be laid, gun emplacements prepared, forces deployed, and offensive or defensive positions solidified; all with relative impunity. U. S. Army Field Manual 61-100 states that troop movements, concentration of forces prior to attack, and conduct of an attack which may be impossible during daylight may be executed in darkness with minimum risk.[3] At the lower end of the combat scale, in guerrilla operations, it is reasonable to conclude that the benefits of night operations are still more telling.

> Guerrilla tactics are primarily small unit, infantry-type tactics which make full use of accurate intelligence, detailed planning and rehearsal, simple techniques of maneuver, speed, surprise, infiltration, specialization in night operations, and the undermining of enemy morale. . . . By specializing in night operations, a guerrilla force effectively reduces its vulnerability to air and artillery attack.[4]

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[3]U. S. Department of the Army Field Manual 61-100, The Division (Washington, D. C.: U. S. Department of the Army, Jan 62 and Change 1, 27 Mar 63), p. 119.

[4]U. S. Department of the Army Field Manual 31-15, Operations Against Irregular Forces (Washington, D. C.: U. S. Department of the Army, May 61), p. 9.

> The magnitude and effectiveness of the probable enemy combat forces to be defeated will vary from scattered guerrillas to organized combat units built around or supported by large numbers of armored combat vehicles, artillery, and close support aircraft. The opposition at the lower end of this spectrum will favor night operations and movement in the face of our superior firepower.[5]

This last precept has been amply substantiated in South Vietnam.

> The majority of Viet Cong activity takes place at night. Based upon reports from other intelligence means, it is suspected that the Viet Cong conduct relatively large movements in the open along roads and waterways during the hours of darkness.[6]

The U. S. Marine Corps Tactics and Techniques Board concluded that "Soviet, Chinese, and numerous communist-oriented guerrilla organizations have clearly indicated a military awareness of operations at night and during other periods of low visibility."[7]

The increasing exploitation of darkness by the enemy dictates an increased counter-effort to limit this exploitation. To this date the effort has been insufficient to give true meaning to our military operations at night.

Secrecy and surprise are fundamentals of combat. The ability to achieve these fundamental combat objectives by using night movement and attack has been demonstrated repeatedly throughout military history. In more recent history, limited or insurgent war has become increasingly night oriented. Darkness has been exploited to the maximum by

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[5]U. S. Marine Corps, "Aids for Close Combat at Night," General Operational Requirement No. CT-4 (Washington, D. C.: Department of the Navy, Headquarters U. S. Marine Corps, 25 Sep 63), p. 1.

[6]U. S. Army Concept Team, Vietnam, "Mohawk Aircraft in the Target Acquisition Role" (Saigon, Vietnam: U. S. Army Concept Team, Vietnam, 1 Feb 64), App. 2, Annex A, p. A-22.

[7]Marine Corps Landing Force Development Center, "Concept of Close Combat During Night Operations and Other Conditions of Low Visibility," Report of Project No. 30-61-10, Conducted by Tactics and Techniques Board (Quantico, Virginia: Marine Corps Landing Force Development Center, 31 Dec 62), p. 4.

guerrilla bands who have recognized the value of night operations to maintain secrecy and to achieve surprise. General Blumentritt observed that "small, well composed combat parties are frequently apt to achieve more during night operations than big mass formations. The effectiveness of such combat groups, far in the rear of the surprised enemy, is usually far more than their actual striking power."[8] A Rand report concluded that "tactically, despite their military inferiority, the insurgents are usually on the offensive, making use of surprise and local superiority in raids, ambushes, and harassing actions."[9] These operations have been conducted predominantly at night for several reasons. The relatively slow and often disorganized reactions of a watchful but sleeping outpost to a well planned and swiftly executed surprise attack will, in most cases, result in heavy casualties to the defenders and probable victory to the attacker. The night ambush is another tactic which capitalizes on defensive confusion with its resultant ineffective counter-fire. A variation of this tactic is the late afternoon ambush in which the guerrilla uses the waning light of day to inflict maximum damage on the ambushed force and then melts into the gathering shadows of dusk.

United States Army doctrine for employment of the division in night combat recognizes that night operations which achieve surprise may offer opportunities for success when daylight operations are

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[8]Blumentritt, Guenther, General der Infanterie a.D., "Operations in Darkness and Smoke," Manuscript No. B-683, Trans. A. Schroeder, Ed. H. Hertman, Originally prepared by Historical Division European Command, Foreign Military Studies Branch (Washington, D. C.: Office of the Chief of Military History, Department of the Army, 1952), p. 22.

[9]H. Speier et al., "Counter-Insurgency and Air Power: Report of a Rand Ad Hoc Group," Memorandum RM-3203-PR (Santa Monica, California: The Rand Corporation, Jun 62), Preface, p. vii.

impracticable. The concept of maintaining continuous pressure on the enemy, day and night, is also stressed.[10] Deception is a factor mentioned in FM 100-5. "Night attacks and night movement are normal operations that offer an excellent opportunity for deception and surprise."[11] Army doctrine also emphasizes employment of counterguerrilla or Special Forces units in night operations to achieve surprise.

> The requirements of the situation determine whether movement and attack should be made during daylight or darkness. Darkness favors surprise and is usually the best time when the operation is simple and the physical arrangement of the installation is well known.[12]

Closely related to previously discussed factors of cover, concealment, and surprise is secrecy. In insurgent dominated areas, the local population is normally reluctant to provide intelligence information to counterinsurgency forces and in many instances they actually provide cover and concealment to the enemy, simply to survive. The terrorized population becomes the unwilling participant in a vast network designed by the insurgent to provide secrecy for his own movement, early warning of approaching government forces, and refuge for the detached fugitive.

A reduction in heat and humidity is the final factor which night gives as a gift to the foot soldier. "Night marches are characterized by . . . better concealment from hostile observation and air attack. In addition to providing better concealment for movement,

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[10]FM 61-100, op. cit., p. 119.

[11]U. S. Department of the Army Field Manual 100-5, Field Service Regulations - Operations (Washington, D.C.: U. S. Department of the Army, 19 Feb 62 and Change 1, 7 Feb 64), p. 66.

[12]U. S. Department of the Army Field Manual 31-21, Guerrilla Warfare and Special Forces Operations (Washington, D. C.: U. S. Department of the Army, Sep 61), p. 116.

night marches may be made to avoid excessive heat and to exploit the darkness and achieve surprise."[13] In a desert or tropical setting, excessive heat is an assumed and accepted factor which degrades operations of men and machines alike. In tropical jungle, high relative humidity adds to the already demoralizing heat effect. Although nightfall brings only partial relief from the sticky, bug-infested dampness of the jungle floor, the usual drop in temperature associated with twilight will forever be a welcome relief to the jungle fighter. The traditional siesta period, so characteristic of tropical and subtropical countries, is a natural and perhaps necessary manifestation of man's inability or unwillingness to do manual tasks when air temperature exceeds body temperature. When, in addition, the air is moisture laden to the point of saturation, man's rebellion is complete.

The advantages of night operations on the ground are easily identified and significant, however, emphasis on exploitation of these advantages has been less than desirable. Unfortunately, emphasis on night air operations has been no greater, and the advantages in that environment are perhaps more significant.

In the Air

Five factors which serve to make night an ally of the soldier on the ground apply equally to airborne combatants. Cover, concealment, secrecy, surprise, and temperature--all of these affect the successful employment of air power, particularly in counterinsurgency operations.

In the typical insurgency/counterinsurgency operation, aircraft are exposed to ground fire not only during the attack or operational phases of their missions but also during the airfield departure and

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[13]U. S. Department of the Army, Field Manual 21-18, Foot Marches (Washington, D. C.: U. S. Department of the Army, Nov 62), p. 4.

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recovery phase. The insurgent, armed only with a small caliber rifle, and positioned beneath the traffic pattern of selected airfields, can inflict light to moderate (and sometimes severe) damage on slow moving aircraft, taxiing, landing, or taking-off. To minimize this hazard, the airmen may well be forced to utilize darkness as an ally.

Darkness provides protective cover and concealment for aircraft during all phases of night air operations. From departure, through enroute, attack, or assault landing, and recovery phases, the pilot and his machine are wrapped in a heavy armor plate of obscurity. The ever-present sniper on an airfield or landing zone perimeter and the insurgent who becomes target-for-tonight must rely predominantly on the relatively inaccurate sense of sound to direct his fire or counterfire. Concealment from observation provided by night becomes protective cover for the pilot, his cargo, his passengers, and his plane.

The night flyer also benefits by the natural secrecy which shrouds his departures and arrivals during darkness. Well organized insurgents are able to monitor daylight air operations emanating from the relatively few major airfields and pass warnings of possible attack through the jungle grapevine to their comrades hiding in the surrounding country-side. From a vantage point or points, the number and direction of flight of helicopters, fighter-bombers, and troop carrying transports can be determined with ease. With this knowledge, the forewarned insurgent reacts accordingly, and one more "search and destroy" operation bears little fruit. Determining the direction of flight of an aircraft at night, however, is a difficult job even for the trained observer. Without being able to visually acquire an airborne object, the insurgent can only guess at its intentions. The

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advantage shifts to the now secretly employed attacker and surprise re-enters the picture.

In a target or landing zone area at night, the element of surprise is further expanded due to enemy difficulty in determining the direction from which the next strafing or bombing attack will come. His inability to observe the pattern of helicopter deployment and of air landed troops once they are on the ground also contributes to surprise. Due to the speed of modern aircraft and helicopters, surprise is always inherent in their employment. Darkness adds an additional facet to the innate ability of an airborne weapon or soldier to surprise an adversary.

Heat and humidity have an adverse effect on pilots and crewmembers which is often equal in impact to its effect on ground forces. This is particularly true in close air support operations and "knap-of-the-earth" flight by helicopters. Although modern jet aircraft have highly effective cockpit heating and cooling systems, when low altitude operations in tropical climates are conducted, the humidity is usually so high that introduction of cooling air into a cockpit can cause fog thick enough to blind the pilot. Conventional aircraft and helicopter pilots do not enjoy the luxury of refrigerated air even if it could be used without clouding the cockpit. Therefore, airmen are forced to perform their highly complex and exacting tasks while bathed in their own energy consuming sweat. Several missions flown in quick succession under these conditions may seriously impair the capability of an airman to perform his duties with maximum efficiency. During fighter-gunnery training at Nellis Air Force Base in the staggering heat of a July day, the author experienced this reduction in efficiency on many occasions after flying several low-level strafing

missions. The green flying suit turns white with the excreted salt of your body, and beer and bed become the only panaceas.

What is one answer to this problem? "Flying in the coolness of the night" is admittedly an over simplified solution, nevertheless, it is one worthy of serious consideration. In consideration of all other factors which affect flight at night, avoiding excessive heat and humidity becomes an important addition to the list.

There are still other elements which favor night air operations. In general, with the coming of darkness, weather conditions begin to improve. The afternoon thunderstorms, so characteristic of countries under the influence of a monsoonal climate, dissipate by mid-evening.[14] The sky clears and instability of the daytime air gives way to smooth and stable air of the night. The aircraft, as a weapon platform, becomes more manageable, and the illuminated target remains steady in the sight-picture of the diving fighter-bomber. Cool night air also becomes more dense, and gusty winds of the day begin to diminish. Denser air gives helicopters more lifting power. Added lift combined with smoother air gives the pilot a margin of safety in his approaches to landing zones, or when hovering is required, that he doesn't enjoy during the hot and turbulent day. In a large scale operation this added lift capability might well result in increasing the airborne force by as much as an entire platoon (one additional soldier per aircraft).

In Chapter I, we discussed natural phenomena of the night which acted to impair the ability of the night flier to perform his mission. One of these was the simple inability to see clearly. It is interesting to note that this same phenomena can serve to aid the pilot

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[14] U. S. Army Concept Team, Vietnam, op. cit., p. 6.

when properly exploited. The immediately discernible rays of a signal flashlight against the background of dark sky or terrain; the coded flashes of navigation lights to signal execution of a maneuver; the relatively easy acquisition of enemy campfires; and the muzzle flashes from enemy ground fire--these are but a few of the ways in which the contrast of light against darkness can be used to advantage by airmen at night. A pilot's ability to see many things is noticeably reduced at night; however, the sharp disparity between general darkness and light from a single candle is unmistakable.

It is apparent that while unfamiliar to some and possibly foreboding to others, night can become an ally to man in the air; an ally which, in the counterinsurgent wars of today and tomorrow, can and most definitely should be exploited to the maximum.

In Vietnam

How do we apply the thesis that "night is an ally" to the counterinsurgency battlefields of Southeast Asia? Is there anything special about Vietnam which makes night more or less an ally in that country?

Aside from the unique considerations of geography (or more specifically in this case, terrain and vegetation), night is as much an ally of the soldier or airman in Vietnam as it is in any other country. In the type of war being fought in Southeast Asia, night has been one of the dominant factors in a large majority of the military actions which have taken place. However, this is primarily due to actions of the Viet Cong and to emphasis which they have placed on night operations. This emphasis has been forced on the VC by the overwhelming (but not necessarily effective) manpower and equipment

superiority of the United States supported GVN forces. It is this fact, in itself, which makes our own emphasis on large scale movement of forces and employment of aircraft during daylight so difficult to understand. We entered the conflict late in 1961 with significant numbers of personnel and tons of supplies and equipment, already knowledgeable of the type of tactics which were being employed by the enemy. We chose to make and continue our buildup as a massive military effort along primarily traditional and conventional lines. It was as if every lesson learned in previous counterinsurgency efforts was a false lesson, and that we must prove that sophisticated and well equipped military forces could, in fact, defeat the barefooted insurgent strictly by weight of advanced American technology and properly guided indigenous personnel. The months and years since our military involvement began have only served to reinforce the old curriculum of how to fight the insurgent. It is the author's belief that the emphasis in the beginning, built on the grandiose scale that it was, and publicized as it was, resulted in keying the communist Viet Cong response, to an even greater degree, to reliance on darkness for all types of military and paramilitary operations. The oft quoted guerrilla tactics, "if the enemy attacks, 'disappear;' if he defends, 'harass;' and if he withdraws or at any time he is vulnerable, 'attack,'"[15] were being practiced to a fine art in Southeast Asia long before American forces arrived on the scene, and they will be practiced long after we withdraw. We could perhaps add one characteristic to the list of guerrilla tactics which would aptly describe their use in Vietnam, and that would be to "do all these things at night."

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[15] FM 31-15, op. cit., p. 9.

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Official records of the current conflict in Southeast Asia are replete with documentation of VC night attacks, ambushes, and harassments. A VC narrative of actions leading up to or supporting the Battle of Ap Bac on 2 January 1963 is indicative and typical of tactics and philosophy which have been used so successfully by the Viet Cong in exploiting darkness. The philosophy was expounded in the statement:

> We should make use of the factor of time and good opportunities to assist our main body in retaining the initiative. We should try to prolong the combat to make the enemy tired and then to easily exterminate him at nightfall.[16]

Various tactics used to exploit the night were expressed in the following details of the actions:

> For 2 successive nights, they led the people to beat drums, call propaganda meetings and sabotage Phu My Strategic Hamlet.
>
> . . . . . .
>
> At night, they penetrated Lam Son training center and Tan Hiep Street and killed 1 enemy and wounded another.
>
> . . . . . .
>
> On the night of 2 Jan 63, we harassed the Strategic Hamlet. . . . And on the night of 2 Jan 63 we harassed Thanh Phu Strategic Hamlet.
>
> . . . . . .
>
> At night, the guerrillas from all 3 villages attacked Nhi Binh and Duong Dien Strategic Hamlets.
>
> . . . . . .
>
> On the night of 2 Jan 63, the same guerrillas and the Dong Hoa guerrillas led the people in attacking Vinh Kim and Dong Hoa Strategic Hamlets.
>
> . . . . . .
>
> On the nights of 2 and 3 Jan 63, the guerrillas from the 3 above villages encircled Cho Cau Post (Long Thien) and attacked and harassed Hoa My Strategic Hamlet.
>
> . . . . . .
>
> On the night of 2 Jan 63, our armed forces infiltrated into My Tho City and fired 2 rifle grenades at the base of the 2nd Armored Regiment.[17] [Underlining mine]

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[16] English Translation of Viet Cong Document, "Ap Bac Battle 2 January 1963," Prepared by Assistant Chief of Staff, J-2 (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, 20 Apr 63), p. 41.

[17] Ibid., p. 6.

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The late afternoon ambush was mentioned previously and further demonstrates tactical use of night by the Viet Cong. The Military Assistance Command, Vietnam (MACV), reporting on operations during the week of 15 August 1964, cited an ambush of this kind and made the following comments:

> THE FACT THAT THE PURSUIT OPERATION WAS COMPLETED, AND THE ARVN UNITS WERE RETURNING TO THEIR BASE, AND WERE FATIGUED AFTER THE DAY'S OPERATIONS, MAY HAVE LED TO A LACK OF SECURITY. THIS, IF TRUE, IS AN INDICTMENT OF THE COMMANDERS, BECAUSE IT IS WELL KNOWN THAT THE DAYLIGHT HOURS FROM ABOUT 1630 ON ARE CRITICAL ONES FROM THE STANDPOINT OF VC AMBUSHES.[18]

The average "regular" soldier too often looks forward to nightfall as the welcome end of a hard day of conflict. This attitude can be disasterous in the face of an enemy which operates on the premise that night is a more advantageous environment for military engagements and surprise attack. The element of surprise used in conjunction with darkness or approaching darkness can be a decisive factor in military operations. Darkness serves to reinforce the already potent military fundamental of surprise.

In Vietnam, the secrecy inherent in night has been added to the insurgents' list of allied forces. "IN STRONGLY VC-DOMINATED DINH TUONG PROVINCE, A VC DOCUMENT WAS CAPTURED WHICH IS ALLEGEDLY A DIRECTIVE OF THE VC MILITARY HEADQUARTERS OF MY THO, ESTABLISHED A CURFEW FOR THAT AREA AND STRICTLY PROHIBITED THE PEOPLE FROM GOING OUT BETWEEN 1900 AND 0700 HOURS."[19] By restricting local population movement to daylight hours, the Viet Cong may maneuver at night with

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[18] U. S. Military Assistance Command, Vietnam, "Military Reports" (USMACV MILREPs, Published Weekly, 11 Mar 64 through 31 Jan 65, Saigon, Vietnam: U. S. Military Assistance Command, Vietnam), Week of 15 Aug 64, p. 9.

[19] Ibid., MILREP Week of 18 Apr 64, p. 18.

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little fear of detection by government agents. They are able to establish ambush or raid attack positions in complete secrecy. In addition, any movement by government forces can be easily detected and attacked or avoided as the situation dictates.

When the author first arrived in Vietnam, one of many Vietnamese military expressions which required definition was the term, "VC Secret Base." Small yellow or red cross-hatched blocks, from three to ten kilometers square, were carefully plotted on the G-2 situation maps and prominently displayed in the Corps Tactical Operations Center (CTOC). From the standpoint of an unindoctrinated Air Operations Officer, these areas initially appeared to be inviting targets for a concentrated program of interdiction. However, a more careful examination of the actual nature of these predominantly jungle "targets," from both an aerial photograph and visual reconnaissance view, soon uncovered the reason behind their designation as "Secret Bases." While the general area had been located on the basis of intelligence reports from defecting or captured VC, the exact location could not be pinpointed on a map to an accuracy of less than three to four square kilometers. With the "bomber" force available at that time, it was not considered feasible to attempt saturation bombing of such a large area. Inaccuracy of maps in this part of the world also contributed to the decision. The fact that the Viet Cong may conduct almost unrestricted day and night training and supply operations under cover of the twenty-four hour "darkness" of the jungle truly categorizes these locations as "Secret Bases." It would appear logical to assume, however, that this type of "target" would, in fact, be more susceptible to attack at night when infractions of light discipline,

born of a sense of security or complacency, would act to pin-point the exact target locations.

The weekly United States Military Assistance Command, Vietnam Military Reports further document the continued VC exploitations of night.

> AT 120100 APRIL, A STRONG VC FORCE SIMULTANEOUSLY ATTACKED VINH TAY OUTPOST . . . AND KIEN LONG DISTRICT HEADQUARTERS . . . IN CHUONG THIEN PROVINCE. . . . AT 120230 FLARESHIPS ARRIVED AND AT 120500 TWO STRIKE AIRCRAFT PROVIDED CLOSE SUPPORT: ONE BOMB LANDED DIRECTLY ON THE 105MM HOWITZER POSITION WHICH VC HAD TAKEN, SHORTLY AFTER DAYLIGHT, THE VC WITHDREW TO THE NORTHWEST.
> . . . . . .
> AT 2000 HOURS THE VC INITIATED A SERIES OF ASSAULTS AGAINST THE BN CO'S ELEMENT. THESE ASSAULTS OCCURRED AT TWO HOUR INTERVALS THROUGHOUT THE NIGHT AND WERE STOPPED JUST SHORT OF FRIENDLY DEFENSIVE POSITIONS.[20]

> EARLY ON THE MORNING OF 19 APRIL, IN AN APPARENTLY COORDINATED OPERATION, VC HARASSED THREE POSTS AND A TRAINING CENTER. . . . AN HOA TAY POST, MANNED BY 59 SDC AND SUPPORTED BY ARTILLERY AND A FLARESHIP, BORE THE BRUNT OF THE VC ACTION.[21]

These reports also testify to general failure or reluctance of GVN forces to counter VC actions with offensive night operations of their own. An example is cited from the MACV Military Report of 28 March 1964:

> ALTHOUGH THE NUMBER OF OPERATIONS INITIATED PRIOR TO DAYLIGHT REMAINS AT THE LEVEL OF LAST WEEK, 17, NO VISIBLE IMPROVEMENT HAS BEEN NOTED IN PLANNED NIGHT OPERATIONS. THE ARVN STILL SHOWS A RELUCTANCE TO PLAN AND INITIATE LARGE SCALE NIGHT OPERATIONS. MACV IS MAKING STRONG REPRESENTATION TO INCREASE THE NUMBER OF NIGHT OPERATIONS IN ADDITION TO ENLARGING THE FRIENDLY FORCES INVOLVED. FAVORABLE RESULTS ARE BEING REALIZED FROM THOSE OPERATIONS THAT ARE INITIATED DURING THE HOURS OF DARKNESS.[22]

The MACV report of 11 April 1964 stated that "INDICATIONS ARE THAT THE HOURS OF DARKNESS ARE BEING USED BY THE RVN PRIMARILY FOR MOVEMENT TO THE OPERATIONAL AREA AND FOR MARSHALLING TROOPS. RATHER

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[20] Ibid., MILREP Week of 11 Apr 64, p. 6.

[21] Ibid., MILREP Week of 18 Apr 64, pp. 24-25.

[22] Ibid., MILREP Week of 28 Mar 64, p. 12.

THAN FOR ACTIVE OPERATIONS AGAINST THE VC.[23] It appears that although some progress is being made to exploit darkness, it is still difficult for American advisors to instill in their counterparts the willingness or desire to achieve the full benefit of well planned offensive operations utilizing this ally, night.

Emphasis must not be any less on exploitation of night air operations than on ground operations. In fact, there appears to be some basis to the contention that night air operations, if properly planned and executed, can be conducted more safely and be more effective in inflicting casualties on the Viet Cong than day air operations.

The hazard to air operations on and near terminal facilities was cited previously. This hazard is particularly evident in Vietnam. At the majority of airfields, special security measures have been required to reduce aircraft damage from Viet Cong snipers on the field perimeters. These measures have been only partially successful in diminishing the threat. As recently as December 1964, an instance was reported of an A-1E aircraft being hit by ground fire on post-flight runup at Bien Hoa Airfield.[24]

Due to the nature of conflict in Vietnam, complete elimination of this hazard is a continuing problem not easily or completely solvable. A possible (but admittedly partial) solution is to increase night air operations and thereby use the natural cover and protection of darkness to avoid the snipers bullet.

The Aircraft Losses Operations Analysis Working Group, appointed by MACV early in 1964 to study methods of reducing aircraft damage and

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[23] Ibid., MILREP Week of 11 Apr 64, p. 12.

[24] Ibid., MILREP Week of 12 Dec 64, p. 6.

loss, arrived at several conclusions which support increased utilization of the hours of darkness for air operations. In discussing night air operations the Group concluded that:

> Although there have been some night air strikes flown in Vietnam, the number of these operations has not been such as to offer full comparison with daylight operations. . . . Based on the observations of pilots who had flown night strike missions and Forward Air Controllers who had conducted night missions, certain obvious advantages are pointed out:
>
> (a) Enemy camp fires and muzzle flashes are quite easy to locate at night.
> (b) Attacking aircraft are hidden from view more easily.
> (c) Enemy troops are presented with an ill defined target.
> (d) Harassment of the enemy at night will have a psychological effect and will deny troops the opportunity to rest.
>
> . . . . . .
>
> All pilots in the investigative committee were highly in favor of carrying out certain night operations and <u>expressed a belief that attacks would prove even more effective than daylight attacks</u>. [Underlining mine]
>
> . . . . . .
>
> Pilots who had operated in the northern or mountainous region were not as enthusiastic in their regard for night operations as those having experience in the Delta area. Both groups agreed that night operations could be increased and that training in night operations was needed.[25]

It is important to note that the people participating in this group recognized that insufficient large scale night air strike or airmobile operations had been conducted (to that date) to draw any valid comparisons with similar day operations or to arrive at final conclusions.[26] They did conclude, however, that "the hit rate on strike aircraft can be reduced through use of improved weapons, taking full advantage of the load carrying capability of all strike aircraft, simultaneous attack with three or more aircraft in each wave and <u>increasing</u>

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[25]Aircraft Losses Operations Analysis Working Group, "Minimizing Aircraft Damage and Losses from Enemy Ground Fire" (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, 30 Jul 64), p. 109.

[26]<u>Ibid</u>., p. 110.

night strike operations."[27] [Underlining mine]

In commenting on development of more effective close air support operations in the II Corps Tactical Zone in Vietnam, the MAAG Senior Advisor stated that "an additional factor in use of air support is its utilization as a threat as well as a weapon. During good flying weather air support plays an important role in suppressing VC activity during daylight hours."[28] With development of an effective night attack and reconnaissance capability, there is no reason to believe that this suppressive role cannot be extended into a twenty-four hour operation. This should be one of our primary air objectives in Vietnam.

Whether the means employed are on the ground or in the air, the ultimate objective of a combatant is to find and pin-point a target for destruction by ground or air weapons. In Vietnam, a great deal of effort has been directed toward use of aircraft for widespread day and night visual reconnaissance. However, night, the exploitable ally, tends to favor the soldier on the ground and limit the capabilities of the "eye in the sky." Some early World War II experiences and difficulties with daytime offensive air operations over jungle terrain were reported by XIV Corps during the Bougainville operations. (These problems are further magnified in a night environment.)

> In operating over jungle terrain tactical air units required careful and thorough briefing. Even after such briefing pilots were sometimes unable to find the target area. This was due to no fault of the pilot but rather to the general absence of landmarks

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[27] Ibid.

[28] Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, "Evaluation of Test Results of the Employment of OV-1 (Mohawk) Aircraft in Support of Counterinsurgency Operations" (Saigon, Vietnam: Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, 19 Jul 63), Annex 9, p. 4.

> in jungle terrain and the total inability of the naked eye to spot any sign of jungle activity on the ground.[29]

As our airborne reconnaissance and interdiction effort increases during daytime, the enemy increases his movement and operations at night. "Heavy reliance on visual reconnaissance permits the enemy the freedom of movement in periods of low visibility and particularly at night."[30]

Although a modern sophisticated army has an ever-increasing capability in the field of reconnaissance, it is still largely dependent on visual acquisition of targets, particularly in a jungle warfare environment. "Finding the enemy is one of the main difficulties in military counter-insurgency operations."[31]

The deployment of OV-1 (Mohawk) aircraft to Vietnam in September 1962 was to test capability of this type of equipment "to provide continuous surveillance over a limited area and to conduct night operations as necessary."[32] Although results of this test were encouraging during daylight operations, night imposed restrictions which proved to be almost insurmountable. In his evaluation of test results of the Mohawk deployment, the Assistant Director of the Joint Operation Evaluation Group, Vietnam stated:

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[29]O. W. Griswold, Major General, U. S. Army, "Report on Lessons Learned in the 'Bougainville Operation'" (Bougainville, Solomon Islands: Headquarters XIV Corps, n.d.), p. 18.

[30]Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, "Evaluation of Test Results of the Employment of OV-1 (Mohawk) Aircraft in Support of Counterinsurgency Operations" (Saigon, Vietnam: Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, 19 Jul 63), Annex 2, p. 7.

[31]H. Speier et al., op. cit.

[32]U. S. Army Concept Team in Vietnam, "Employment of OV-1 (Mohawk) Aircraft in Support of Counter-insurgency Operations," Final Test Report (Saigon, Vietnam: U. S. Army Concept Team in Vietnam, 25 May 63), Tab 1, p. 1.

> Visual reconnaissance plays a large part in the surveillance of the enemy. However, it plays this role by default. The VC conduct the major part of their movements in combat operations during the hours of darkness. The need for maintaining surveillance over this important phase of the enemy activities has long been recognized, but the state of the art has provided only a limited capability in this direction. . . . Since the VC move during the hours of darkness whenever possible, it is logical to assume that visual detection is feasible in the closing hours before a raid when daylight is useful for the final VC preparation or implementation phase. This means that provision should be made for covering the entire country.[33]

Maintaining visual observation of an entire country, the size of South Vietnam, is beyond the practical capabilities of present ground and air force available in that country. Such an operation during daylight hours would be difficult; and to expand visual surveillance missions on a significant and meaningful country-wide scale into the hours of darkness is seemingly impossible. Cover and concealment provided by darkness is as much the ally of the Viet Cong as neighboring "neutral" sanctuaries. As previously stated, the combination of natural cover and concealment afforded by a jungle battlefield and the additional concealment inherent in darkness present a formidable obstacle to observation of enemy activity. Several American advisors to ARVN units made specific comments on the Mohawk Project Test Report which further substantiates the problems of finding and fixing the Viet Cong. The Senior Advisor to the 7th Infantry Division (ARVN) claims that "difficulty in confirming VC unit locations can be attributed to 3 factors.

a. Excellent use of camouflage and concealment by the VC.
b. The continued movement of VC units within the Tactical Zone, normally during the hours of darkness and in small groups.

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[33]Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, op. cit., p. 5.

c. The time delay experienced between the original sighting, reporting to ARVN G-2 and the time the Mohawks received the mission.[34]

The G-2 advisor assigned to Advisory Team 51 observed that "the VC rarely move during daylight hours. When they do, they do not expose large elements to air observation."[35] In the open areas of the Delta region the problems were not appreciably diminished. The Army Concept Team In Vietnam (ACTIV) report on the use of Mohawks in the target acquisition role included the following statement:

> The VC operating in the Delta areas were well trained in the use of camouflage, cover, and concealment. They intermingled with the population, massed only when necessary, and as a rule moved during the hours of darkness. Mohawk crews seldom detected and identified large groups of insurgents.[36]
>
> On one night mission flown in the southern Delta area, attempts were made to conduct visual observation under the light of flares dropped by an O-1 aircraft. Results were marginal. Villages, canals, roads, and large groups of people were easily detected, but positive identification was not possible. . . . A further attempt to conduct visual reconnaissance of a canal using the landing light of the Mohawk provided little specific detail, and the aircraft was fired at several times. Defensive fires could not be returned because it was impossible to differentiate between friend and foe.[37]

The importance of night visual reconnaissance cannot be overemphasized, but it is also important to recognize that beneath the canopy of primary jungle, contrast between darkness of night and darkness of day becomes a contrast of black and dark gray rather than of black and white. Sophisticated detection devices developed for night reconnaissance should also be used, where feasible, during daytime to

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[34] U. S. Army Concept Team, Vietnam, op. cit., App. 3, Annex A, p. A-28.

[35] Ibid., App. 5, Annex A, p. A-43.

[36] Ibid., p. 35.

[37] Ibid., p. 36.

penetrate the everpresent darkness of the VC infested jungle. In rebutting the comment of the Assistant Director of JOEG-V ("The VC conduct the major part of their movements in combat operations during the hours of darkness."), the Senior Advisor to the ARVN I Corps had this to say:

> This statement is true of VC movements in combat operations within I TAC ZONE. However, the primary mission of I Corps is to interdict VC infiltration into RVN. VC infiltration movement does not take place during the hours of darkness. . . . Infiltration movement occurs between the morning meal, prepared at approximately 0600, and the evening meal, prepared at approximately 1930.[38]

It is considered safe to assume that with an increase in air action against infiltration routes, even the infiltrators will be forced to rely more heavily on use of the added protection and concealment of the nighttime jungle. The ally is always present with its intrinsic cover and concealment, exploitable by the willing.

We have discussed cover, concealment, secrecy, and surprise as elements inherent in night air and ground operations in Vietnam. The final factor, heat, is also characteristic of Vietnam and is manifested markedly in the level of activity of American advisors as well as the Vietnamese.

When first confronted with the seemingly apathetic attitude of the Vietnamese military man, American advisors were hard pressed to disguise their feelings of frustration and anger. Only time and continuous exposure to the sweatbox environment that is Vietnam tempered this feeling. One patrol with an ARVN unit through the central highlands jungle or one midafternoon combat mission in a VNAF fighter-bomber made believers of the severest critics. In the southern delta

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[38] Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, op. cit., Annex 5, p. 7.

regions of Vietnam, the steaming swamps and rice fields offer even less protection from the searing sunlight. The characteristically frail and normally mal-nourished Vietnamese soldier or airman is ill-equipped physically for sustained daytime military operations under these conditions. The more one ponders this situation the more difficult it becomes to reconcile continued emphasis on large scale day operations. In consideration of the factor of heat alone, how much more logical it would seem to be to commit ground forces in the relative coolness of the night. Examination of the problem of employment of ground forces at night is beyond the scope of this thesis, but it is a problem in Vietnam that warrants further serious study.

Night warfare in Vietnam is no different than such warfare in any other country of the world, but it must be fought offensively by friendly forces as well as the enemy if we are to achieve victory. The gradual trend in this direction for both ground and air forces is the evolving doctrine to which this paper is addressed.

CHAPTER III

NIGHT AIR OPERATIONS IN VIETNAM

To provide a logical but diversified approach to the history of night air operations in Vietnam, each of the years, 1962, 1963, and 1964 will be examined, in order, from three distinctive viewpoints. The year 1962 will be analyzed primarily from a standpoint of personal experiences; 1963, through questionnaire and interview derived recollections of other participants and combatants; and 1964, through an analysis of the lengthy and detailed MACV MILREPS. The central theme of night air operations in Vietnam will be woven throughout the discussion by reference to numerous other official records which document the slow but steady increase in emphasis on air operations at night in that embattled country.

Personal Experiences, 1962

A few key facts, events, dates, and statistics will help to establish a framework for the discussion.

> The mission of the Vietnamese Air Force is to support the Army, including troop transport, air-ground support, liaison, reconnaissance and aerial supply and evacuation. Functionally it is a segment of the Vietnamese Army and completely subordinate to the Army General Staff. The Deputy Chief of Staff (Air) of the Army General Staff, is in effect, the Commander of the Vietnamese Air Force.[1]

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[1]STRAC Country Study, "South Vietnam," Prepared by Assistant Chief of Staff G-2, STRAC Intelligence Center (Fort Hood, Texas: Headquarters, III Corps and Fort Hood, 26 Jun 64), p. 99.

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The Vietnamese Air Force in late 1961 was built around a limited number of C-47 transports, two squadrons of L-19 (O-1A) liaison and visual reconnaissance aircraft, one squadron of T-28 training planes converted to a fighter-bomber role, a few H-34 helicopters, and one squadron (25 aircraft) of AD-6 (A-1H) fighter-bombers. There have been no significant changes in types of aircraft operated by the Vietnamese to this date (March 1965), and "since the terms of the Geneva Accord severely limit the introduction of new equipment, particularly jet aircraft, no major change in the Vietnamese Air Force is expected for several years.[2]

Changes which did take place in the VNAF during late 1961, 1962, and subsequent years, came about due to introduction of U. S. Army, U. S. Air Force, U. S. Navy, and U. S. Marine aircraft into the country, accompanied by an ever increasing number of American advisors.

The first United States Air Force element to deploy to Vietnam was a detachment of the 1st Air Commando Wing. This detachment, known as Project FARMGATE, arrived at Bien Hoa Airfield on 5 November 1961 and was placed under operational control of the 2d Air Division.[3] The first United States Army air support elements to arrive in Vietnam were the 8th and 57th Transportation Companies (Light Helicopter). The date was 11 December 1961.[4] These units were the first major United

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[2]Ibid., p. 100.

[3]U. S. Air Force, "Fact Sheet on Special Air Warfare," (Washington, D. C.: Office of Information, Office of the Secretary of the Air Force, Internal Information Division, Mar 65), p. 14.

[4]Director of Army Aviation, "U. S. Army Aviation Operations in South Vietnam," Office of the Deputy Chief of Staff for Military Operations, Department of the Army (Washington, D. C.: Department of the Army, 1 Oct 62), p. 9.

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States contribution to the Republic of Vietnam air effort and heralded the beginning of a massive air power buildup which numbered 923 assigned aircraft as of 2 January 1965.[5] (See Table 1 for a detailed listing of aircraft, by type, employed in Vietnam as of 2 January 1965.)

During 1962, however, the overall air effort was characterized by improvement in operations and sortie rates more than by an increase in numbers of aircraft introduced into the country. The feeling prevailed that American ingenuity and management practices alone would be adequate to deal with the situation; and results were impressive. From a 1961 average of 120 VNAF sorties per month, the sortie rate increased in the last quarter of 1962 to 718 sorties per month. The joint VNAF/USAF sortie rate increased from a low of 225 in February to a high of 1095 in November.[6] VNAF/USAF sorties of all types totaled 8055 during 1962.

A detailed breakdown of these sorties, by type, was apparently never attempted on a countrywide basis although each ASOC submitted daily Operations Activities Reports (OPSACTS) and Intelligence Summaries (INTSUMS).[7] The only record found which did give some indication of

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[5]U. S. Military Assistance Command, Vietnam, "Military Reports," Published Weekly, 11 Mar 64 through 31 Jan 65 (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, Week of 26 Dec 64), pp. 6-7. (The figure 923 does not include the 48 USAF jet powered aircraft actually available in Vietnam but not listed as assigned there.)

[6]Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, "Evaluation of Test Results of the Employment of OV-1 (Mohawk) Aircraft in Support of Counterinsurgency Operations" (Saigon, Vietnam: Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, 19 Jul 63), p. 11-b.

[7]These were detailed reports listing each sortie by mission type and were summarized weekly by Second Air Division. All commands or agencies which might have kept these 1962 summaries, including, Second Air Division, 13th Air Force, PACAF, and ACSI, were quiried for information on availability of the records, but to no avail.

TABLE 1

AIRCRAFT STATUS IN VIETNAM, 2 JANUARY 1965

Force of Assignment	Type Aircraft	Number of Aircraft Assigned	Number of Aircraft Available
USAF	O-1F	23	18
"	U-10B	3	2
"	C-123	72	59
"	C-47	7	6
"	C-54	4	4
"	A-1E	48	41
"	B-57	0	13
"	RB-57	0	3
"	RF-101	0	11
"	U-3B	2	2
"	F-100	0	13
"	F-102	0	10
"	HU-16	0	2
"	HH-43F	0	6
Sub-total		159	190
VNAF	A-1H	91	78
"	T-28B	4	4
"	O-1A	38	31
"	C-47D	31	25
"	RC-47D	3	3
"	UH-19	16	16
"	RT-28	5	5
"	EC-47D	1	1
"	U-17A	25	25
"	U-6A	8	8
"	H-34	60	58
Sub-total		282	254
USA	UH-1B	278	238
"	CV-2B	33	26
"	JOV-1	12	12
"	O-1F	50	46
"	U-1A	27	20
"	CH-37	9	5
"	U-6	31	N/A
"	U-8	11	8
Sub-total		451	355
USMC	UH-34D	27	23
"	O-1B	3	3
"	C-117	1	1
Sub-total		31	27
GRAND TOTAL		[illegible]	826

the type of flying activity during 1962 was a 2d Air Division study generated by the ever present and continuing controversy over Air Force reaction to Army requests for immediate air support. The author contributed the sortie records of II ASOC for the period July-October 1962, and the resulting study revealed a relatively low percentage (1.6 per cent) of sorties flown in response to immediate air requests.[8] This figure is indicative of the general tenor of the air effort in Vietnam during 1962. The main effort of VNAF and USAF pilots was directed toward training and general improvement of combat proficiency, and the average ground forces engagement with the VC was of such a nature and duration that close air support (as it was provided at that time) proved to be of little direct value to ARVN forces in the field. The majority of VNAF/USAF air operations consisted of interdiction, reconnaissance, and supply airlift, while the U. S. Army and U. S. Marines' air effort was concentrated on heliborne and liaison operations (personnel lift and resupply).

As for night air operations during 1962, the author's recollection centers around several significant events or circumstances. The first of these occurred within ten days after arrival in Pleiku. A U. S. Army sergeant, in a moment of possible apprehension over his assignment to Vietnam, slit his throat. Immediate evacuation to a hospital was necessary and was accomplished by a skillful and daring C-123 aircrew who flew, without benefit of navigational aids, from Saigon on a pitch black night and landed their aircraft on the short, rolling, rusty PSP runway at Pleiku, aided only by the lights of jeeps

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[8]Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, op. cit., p. 6.

parked at either end of the airfield. The operation was a success, the sergeant survived, and the U. S. Air Force made its entry into night air operations in Vietnam. This type of flying, although under somewhat less severe conditions, became almost routine during the ensuing months, and many American and Vietnamese soldiers and airmen owed their lives to the C-123 pilots and their "high-tailed" ambulances.

The second event resulted in far reaching effects. The Vietnamese radar site at Pleiku (call-sign PAGODA) was declared operational during the final week of March 1962. Manned by one American and several Vietnamese trainee controllers, it functioned primarily as a traffic control and flight-following facility assisting Air Force and Army aircraft in navigating from point to point within the central part of South Vietnam. It was this radar site, equipped with World War II TPS-1 (search) and TPS-1D (height) radars, that first detected what was thought to be clandestine enemy night air operations originating in Cambodia and entering Vietnamese airspace. Exact dates cannot be recalled, but approximately 16 or 17 April 1962, radar contacts with unidentified airborne targets were made beginning about midnight and continuing for several hours. In consideration of the "newness" of this "old" radar and the fact that trainee controllers had made the first identification, activity the first night was limited to attempts by hastily assembled U. S. Air Force and VNAF officers to determine what the radar plots actually were. The only experienced controller concluded that something <u>was</u> on the scopes and it <u>was</u> definitely airborne, although moving very slowly (estimated eighty to one-hundred miles per hour). Because there were no provisions for countering an enemy airborne threat at that time, we could only watch the "blips" as they

slowly moved north along the Cambodian border and eventually faded. The next night was a different story. Vietnamese manned T-28 fighter-bombers had arrived at Pleiku that afternoon. The Vietnamese Director of the JOC and numerous other American and Vietnamese observers from Saigon had also arrived. A "Scramble" communications line had miraculously been installed from the radar site to the flightline in less than twenty-four hours and the T-28 pilots were standing by at the airfield to take-off on a moments notice: and take-off they did. At about one o'clock in the morning, "blips" reappeared on the scope and the first air defense mission of this little counterinsurgency was was launched into the moonlit night. Nothing was sighted, but the enthusiasm of the chase was something to see and hear. Moonlight proved to be the eventual key to identification of the targets, but not before an element of U. S. Air Force F-102 interceptors from the Philippines had conducted a lengthy test (Project WATERGLASS) to determine their capabilities to shoot down low, slow-flying targets. Four U. S. Navy AD-5 (A-1E) radar equipped aircraft also flew a large number of fruitless missions chasing the illusive targets around the night sky. The final answer to the puzzle was determined almost a year later (in February 1963) when a sharp-eyed AD-5 pilot visually identified the suspected airborne menace as flocks of birds. Consultation with Audubon experts in the area (something which had not been considered previously) confirmed the fact that moonlight migration is one of the habits of geese in this part of the world, and that this migration does take place in February, March, and April on nights when the moon if full. The only consolation in the whole fiasco was the proof that Pleiku radar site, with its old equipment, was performing far above expectations; more important and more pertinent, this incident marked the beginning of

night air operations by fighter aircraft in Vietnam.

An interesting side-light to this event was discovery by night fliers of the extent to which the Plateau jungle was being burned. U. S. Army helicopters had taken off the second night of the radar sightings in an attempt to determine whether clandestine aircraft were air dropping supplies. The helicopter pilots reported, and the author later confirmed personally, the fact that literally hundreds of large jungle fires were burning over the entire Plateau area. There was some speculation that the radar "blips" detected were ghost targets anomalously propogated by a temperature inversion induced by rising heat from the jungle fires. However, this theory was never confirmed. During the early spring months of February, March, April, and May, the Plateau jungle has dried to the extent that it can be burned by the Montagnards (natives of the Plateau) to make room for planting small crops of rice and tobacco. During these months, the sky is hazy with smoke during the day, and the night sky is lighted as if from the lights of a large city. This is a seasonal factor which makes night identification of ground targets difficult in I and II Corps Tactical Zones, particularly when pilots are attempting to locate the VC by light from their campfires. This is a characteristic of the central and northern parts of South Vietnam which we may assume will not change significantly in the years to come.

The only other specific event of a personal nature which relates to night air activity during 1962 was cited in the introductory chapter to this thesis. However, several important steps were taken during this year which directly or indirectly affected the future of night air operations and which are worthy of mention. The first of these was development of the "flaming arrow

Early in 1962, personnel of the Field Command Advisory Detachment, Vietnam, recognized that the new "strategic hamlet" program would never be successful unless some method could be developed to assist aircraft in providing air support to hamlets and outposts under night attack. Although at that time there was limited capability to perform air support missions at night, MAAG and 2d Air Division planners went ahead with development of a nationwide project to place pivotable bamboo and canvass constructed "arrows," outlined with gasoline filled cans, in each village and outpost. Air officers from 2d Air Division developed dimensions of the device and MAAG catalogued exact GEOREF positions and configuration of each facility at which "arrows" were to be installed. The "arrows" could be ignited in a few seconds and turned to point in the direction of the main VC attack. In addition, each outpost was to lay whitewashed rocks around the post primeter which would show up plainly in daylight or under the glare of air-dropped flares. The plan received the blessings of the ARVN Field Command in February and was first tested at an abandoned outpost twenty kilometers south of Saigon. ARVN troops built the "arrow" and 2d Air Division, MAAG, and the ARVN combined forces to conduct two flight tests late in February. One test was conducted during daylight, and no difficulty was experienced in identifying the post. The second flight test was conducted at night by a C-47 flare aircraft which was vectored to the general vicinity of the outpost by the TACS radar at Tan Son Nhut, and again the pilot easily identified the post. The ARVN Field Command was favorably impressed by results of the tests and in March 1962 ordered "arrows" installed at every remote military and paramilitary facility in Vietnam. The plan caught on quickly. First Corps was the

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first command to install "arrows" followed by II Corps and III Corps. The "Flaming arrow" was first used in July, under actual night attack conditions, by a Special Forces "A" Team in the southern part of II Corps Tactical Zone. The attack was beaten back supported by a C-47 flareship and several VNAF AD-6 (A-1H) fighter-bombers. The plan had proved its value. Since that time, the "flaming arrow" has been used to advantage by hundreds of outposts and villages and has become a permanent fixture on the Vietnamese scene. The value of the "arrow" went beyond its simple value as an identification device. Lt Col. Bernard Big, Inf., USA, Senior Advisor to the Self Defense Corps (SDC) and Civil Guard (CG) stated that morale of the outposts was greatly improved by setting up the "arrows."[9]

Aside from the increased night alert posture maintained by aircraft at Tan Son Nhut and Bien Hoa (primarily an air defense alert), and an occasional scramble to go "bird-hunting" or flare-dropping, the night air during the early summer months of 1962 was left to migrating geese and infrequent medical evacuation missions by C-123 and helicopter aircraft. The relative absence of night air activity at Pleiku airfield during this period was pointedly demonstrated one bright morning when upon arrival at the flightline to brief an early strike mission the author discovered literally hundreds of bamboo stakes firmly planted in the PSP runway. Viet Cong Propoganda leaflets were affixed to the pole tops; a demonstration of the questionable capabilities and/or alertness of the ARVN troops who were supposedly guarding the runway perimeter.

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[9]Interview with Maj. William S. Schroeder, Inf., USA, USACGSC Student, 11 Feb 65. (Major Schroeder was instrumental in establishing the "flaming arrow" procedures and cataloging all villages and outposts which constructed the "arrows"

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As stated previously, the summer months of 1962 saw the beginning of an earnest but at times woefully inadequate attempt to provide air support to villages and outposts at night. By mid-fall, C-47 flareships were becoming a familiar sight in the night sky over Vietnam. However, their use was more or less limited to an area in the immediate vicinity of Saigon (in what was then the III Corps Tactical Zone). This area, being more heavily populated, also experienced a greater number of night attacks and outpost harassments. During the period from September through December 1962 there were only two short periods during which a C-47 flareship was actually located in II Corps area. Both of these deployments resulted from rumors of planned VC attacks on important ARVN installations in the area; attacks which never materialized. Attacks did continue at night but always at some remote village or hamlet where radio equipment was not available and the villagers could not immediately contact aid.

One additional event in 1962 gave some indication of an evolving interest in utilizing aircraft at night. The 23rd Special Warfare Detachment (SWAD) arrived at Nha Trang in September with six JOV-1 (Mohawk) aircraft. Although their mission was never directed specifically toward operations at night, this unit did have a night capability and some effort was made to use this potential. During the final two months of 1962, the 23rd SWAD exercised its limited flare illumination capability (the Mohawk carries six flares which can provide a total of eighteen minutes of illumination) by flying two sorties in support of two separate railroad trains under night attack. Among other missions, "during the period 1 November 1962 - 28 February 1963, the 23rd SWAD provided the following air support to the II Zone, MRSS [Military Railway Security Service] . . .

Special flare missions based on analysis of previous VC actions in an effort to trap the VC and/or prevent damage as a result of VC sabotage during the hours of darkenss."[10] This unit also maintained a night alert status similar to that which USAF/VNAF maintained at Bien Hoa and Tan Son Nhut. "At night a standby aircraft equipped with flares and a standby crew were designated to enable 'Scramble' illumination missions to be launched within 15 minutes of receipt of the mission request."[11] An indication of utilization of these aircraft for illumination missions can be determined by noting that during the period 16 October 1962 to 15 March 1963 the 23rd SWAD flew 778 combat support missions. Only fourteen of these were night illumination missions.[12]

The Mohawk has an excellent night capability, but this fact was not fully recognized by ARVN commanders, or by their advisors, during this period of time. The final test report of the 23rd SWAD deployment mentioned that "Mohawk equipment includes an AN/ARA-31, which permits the pilot to home on any tactical FM radio. This capability was used for locating friendly units and for finding target areas for night flare drops."[13] However, the test report did not indicate exactly how often this capability was used or, in fact, if it was used.

Personal experiences and memories form an unsubstantial base for development of a history, especially when recorded at a time relatively far removed from the actual events. However, for the purposes of this

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[10] U. S. Army Concept Team in Vietnam, "Employment of OV-1 (Mohawk) Aircraft in Support of Counter-Insurgency Operations," Final Test Report (Saigon, Vietnam: U. S. Army Concept Team in Vietnam, 25 May 63), Tab A-5, p. 2.

[11] Ibid., Tab 5, p. 2.

[12] Ibid., Tab 1, p. 4.

[13] Ibid., Tab 3, p. 3.

thesis, memories of the author and other individuals directly involved with making that history do point to an awakening interest in night air operations which was evident during this first year of substantial American participation in counterinsurgency operations in Vietnam.

The Advisors' Point of View, 1963

The author prepared a questionnaire on the subject of night air operations in Vietnam and distributed it to sixty-six members of the regular 1964-65 class of the U. S. Army Command and General Staff College who had recently returned from duty in South Vietnam. Forty-one of these questionnaires were completed. Twenty-four of these officers were on advisory assignments in Vietnam which resulted in personal experience with night air operations. An analysis of their comments will serve as a foundation for discussion of night air operations in Vietnam, 1963.

To establish the 1963 experience factor for officers who completed questionnaires, see Graph 1. This graph will also serve to fix the time frame from which specific comments by specific officers are taken. A complete listing of those officers whose experiences are recounted is contained in the bibliography.

It will be noted that all but two of the individuals were in Vietnam during part of 1963. Although they don't bear directly on 1963 air operations, the following comments of Majors Pulsipher, McLean and Captain McKee are of particular interest due to the relative scarcity of information on night air activity during 1961 and 1962. Major Pulsipher was assigned to a Special Forces "A" Detachment at Camp Hoa Cam, fifteen kilometers west of DaNang in I Corps area. He particpated in eighteen night ground operations and felt that air support could have

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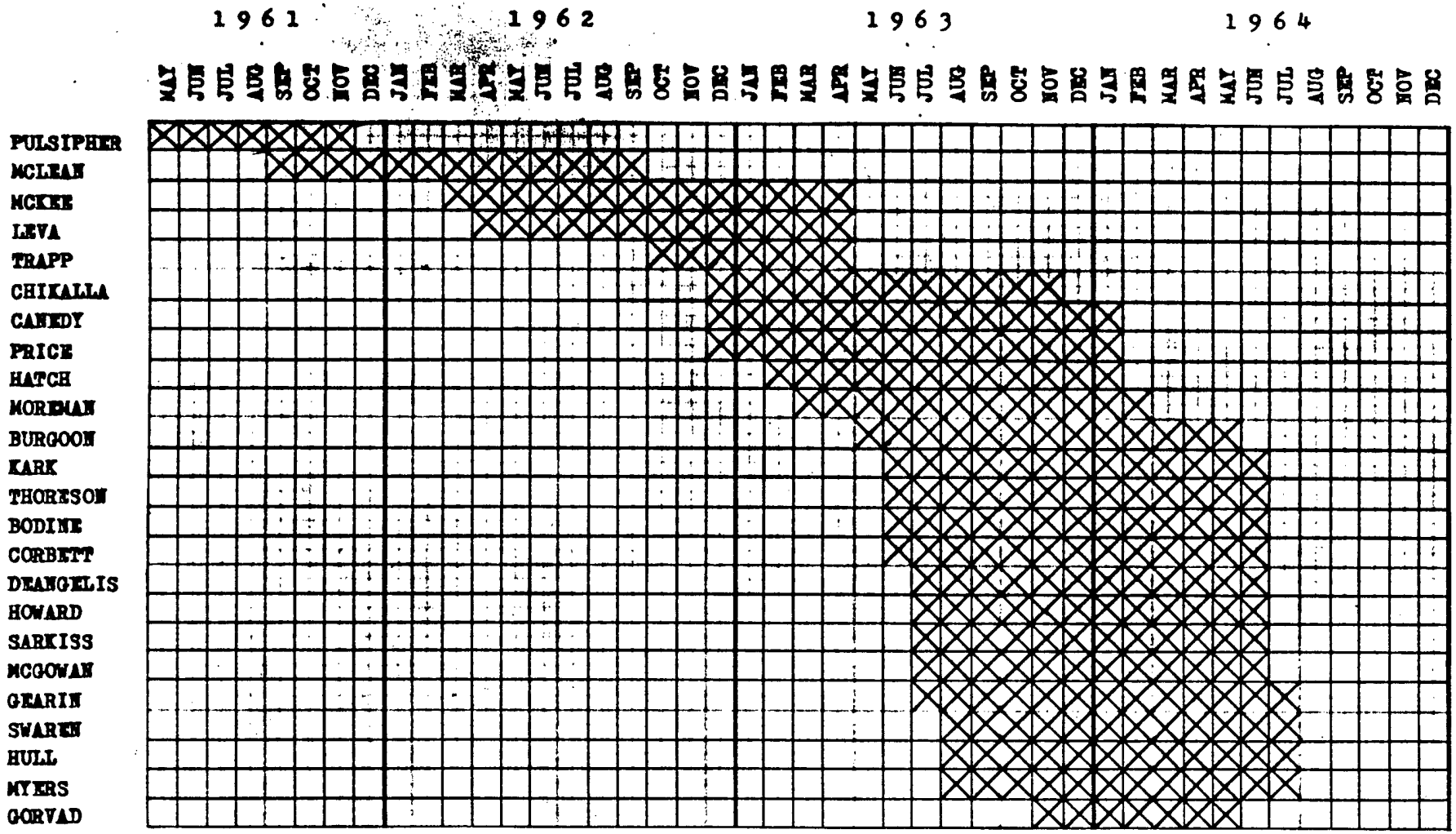
GRAPH 1

VIETNAM TOUR LENGTHS AND TIME PERIODS OF OFFICERS
SUBMITTING COMPLETED QUESTIONNAIRES



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been used to advantage on eight of these. He indicated, however, that at that time, there was no responsive source of night air support.

> Air Force and Army helicopters refused to fly at night except for parachute operations. . . . No air [was requested], it was too slow, [we] used artillery flares about 10 times on night contacts also 60mm mortar flares and hand flares. . . . We could not depend on close air support so quit asking and used artillery fires when possible--if out of range we just used what we had.[14]

Major McLean was also stationed in I Corps area as an armored regiment advisor. He participated in only one night ground operation during his tour and commented on the extreme lack of air support during this period as follows:

> The unit I advised was fragmented over the entire I Corps area--as a result no operations involving the whole unit were undertaken--the one operation mentioned used only one company in support of a 3d Inf Rgt operation. At the time there were no U. S. channels for request of close air support. Vietnamese channels for air support north of DaNang took so long that commanders did not even consider such requests.[15]

Captain McKee was stationed in Tay Ninh Sector approximately eighty-five kilometers northwest of Saigon in II Corps Tactical Zone. He participated in "twenty to thirty" ground operations at night but all of these were with small foot patrols. He felt that night flare or close air support could not have been used to advantage during this type of operation because it "would have normally exposed us rather than VC." He observed the use of airborne flares in defense of villages under attack "at least 30 times," and felt that this was the only type of night engagement in which close air or flare support might be used effectively (although he recognized several additional capabilities).

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[14]Questionnaire, Maj. Elwin D. Pulsipher, Inf., USA, USACGSC Student, 19 Nov 64.

[15]Questionnaire, Maj. R. P. McLean, Armor, USA, USACGSC Student, 19 Nov 64.

During my tour flares and night close air support were available primarily for relief of posts under attack. [Night close air/flare support] would be excellent for harassment or interdiction on a daily basis.

An interesting comment which demonstrates the increase in night air capability during the latter part of 1962 was Captain McKee's statement that response time for requests for air support was "faster at night."[16]

These few comments are important to show the rapid increase in emphasis and use of aircraft at night during late 1962 and lead us into the general analysis of comments and statistics derived from the larger number of officers who served in Vietnam during a significant number of months in 1963.

The questionnaire attempted first to establish the amount of night offensive ground activity conducted during 1963 and then to compare this activity with related night air operations. Of the 21 officers questioned, 16 had participated in a total of 385 night offensive ground operations. (The five non-participants were aviation, artillery, or headquarters advisors.) It was generally concluded that night air support could have been used to advantage on 136 of these operations (35 per cent). Illumination and/or close air support was actually requested on 62 (16 per cent) but provided on only 27 (7 per cent) of these actions.

The multiple and complex reasons for failure to fly requested night air support missions are buried, perhaps forever, in every level of the time consuming chain of command through which air support requests had to pass in Vietnam before aircraft actually became airborne.

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[16] Questionnaire, Capt. R. W. McKee, Armor, USA, USACGSC Student, 19 Nov 64.

[redacted]

One aspect of the problem was a lack of knowledge of available air support and how to go about getting it in time to do some good. Only seven of the sixteen officers who had gone into the field at night had been briefed on overall air support available to them. Only eight were advised by higher headquarters directly when airborne or strip alert aircraft were going to be in the area of their operation and available on call for their use.

The length of time involved in a contact with VC forces at night was reported as varying between three to four minutes and five to six hours, depending on size of forces involved and circumstances under which contact was made. The average size VC force engaged at night was estimated to be of platoon size although contacts with forces from 5 men to 500 men were also quite common. Major McGowan, a Civil Guard battalion advisor, stated that although he considered his night operations conducive to the use of air support, the time of engagement was usually too short to obtain such support.

> [Time] is the most important limiting factor; behind this is the slowness of processing through VN channels a request for immediate air support; and third, lack of ground/air communications limits effectiveness. . . . Aircraft must be in the air, available within 30 minutes of request. Direct ground/air communications must be available.[17]

There was widely varying opinion expressed by the officers questioned when asked to state an overall estimate of the effectiveness of air support in determining a successful operational outcome during night operations in South Vietnam.

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[17]Questionnaire, Maj. Robert S. McGowan, Armor, USA, USACGSC Student, 19 Nov 64.

Major Trapp, a Special Forces "A" Detachment Commander, felt that night air support was "totally unsatisfactory."[18]

Captain Chikalla, assigned to the Vietnamese Ranger Command, claimed that night air support "was very effective when adequate communications were established."[19]

Major Price, an advisor to an infantry regiment, said that "air was an effective and valuable asset. The difficulty was in establishing priorities and overall coordination."[20]

Major Moreman, an advisor to the Chi Lang Training Center made the following comments:

> In a defensive situation the flares are very effective. In offensive situations there are many 'ifs' --area, location of enemy in relation to attacking forces (surrounded, etc.), numbers of enemy and ground forces leadership. But well coordinated air could have been effective several times on known enemy companies and battalions that were moving and crossing open areas at night or on known enemy night concentrations.[21]

Captain Burgoon, an artillery advisor, stated that night air support "wasn't effective unless we had a ship up in the area on an alert status."[22]

Major Thoreson, a ranger battalion advisor, felt that adequate and timely night air support could have been utilized in only 10 per cent of the night operations in which he participated.

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[18]Questionnaire, Maj. L. R. Trapp, Inf., USA, USACGSC Student, 19 Nov 64.

[19]Questionnaire, Capt. Gerald G. Chikalla, Inf., USA, USACGSC Studnet, 19 Nov 64.

[20]Questionnaire, Maj. George B. Price, Inf., USA, USACGSC Student, 19 Nov 64.

[21]Questionnaire, Maj. Marcus D. Moreman, Inf., USA, USACGSC Student, 19 Nov 64.

[22]Questionnaire, Capt. Kenneth L. Burgoon, Arty., USA, USACGSC Student, 19 Nov 64.

[redacted]

> This figure is low since my area was almost entirely jungle (Zone D) where daylight observation was often limited to 5 meters. On the jungle periphery this percentage increases.

Major Thoreson also emphasized necessity for continued and widening use of a combination flareship/strike capability.

> During Jun-Dec '63 VC night attacks of hamlets, the VC would withdraw when flare support was provided. During Jan-May '64 VC would not withdraw unless air strikes were made along with flare support.[23]

Major Bodine, a 5th Infantry Division (ARVN) advisor, supported the previous statement when he observed that:

> Flareships were quite successful in breaking off attacks on hamlets. Close air support of units [was] not too successful due to difficulty in locating targets and marking friendly troops.

However, Major Bodine did state that night close air/flare support could have been used to advantage "in all cases where significant contact was made with Viet Cong."[24]

Major Corbett, an artillery and Sector advisor in Pleiku Province, strongly supported use of flareships, particularly in the mountainous terrain of central Vietnam.

> Flare support is vital to operations in Vietnam. When under attack, illumination would immediately become the balance of power and force the VC to halt their assault. There have been several occasions where illumination alone has caused the VC to break-off.[25]

Major DeAngelis, an armored cavalry squadron advisor, indicated some of the limitations in use of night air support. He felt that night air support could have been used effectively on only 15 per cent of the operations in which he participated.

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[23]Questionnaire, Maj. David P. Thoreson, Inf., USA, USACGSC Student, 19 Nov 64.

[24]Questionnaire, Maj. James F. Bodine, Arty., USA, USACGSC Student, 19 Nov 64.

[25]Questionnaire, Maj. W. T. Corbett, Arty., USA, USACGSC Student, 19 Nov 64.

[redacted]

> Flares would be good if responsive to the ground commander since the VC move during the night in groups. Close air would not work where I was. [It was] difficult to control.[26]

Captain Sarkiss, a ranger battalion advisor in III Corps area, was also concerned with the communications problem:

> I feel they [night close air and flare support] are damn important. The biggest problem is communications. The ground element can't talk with the pilot of the aircraft.

Captain Sarkiss also observed that in the night operations in which he was involved, close air/flare support was not effective because engagements lasted such a short period of time, "but if a hamlet was being hit they could be of great assistance." He felt that night air support could have been used to advantage in approximately 50 per cent of the night operations in which he participated.[27]

Major Gearin, an infantry regimental advisor, concurred in this opinion:

> The defense of posts and towns were unquestionably conducive to the use of close air support; many night offensive operations could have been.

Major Gearin continued to say: "Until GVN can provide effective night close air support, a successful counter Phase II insurgency is impossible."[28]

Majors Swaren, Hull, and Myers, all of whom were infantry division advisors, were of the opinion that flare support was good but

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[26]Questionnaire, Maj. Joseph A. DeAngelis, Armor, USA, USACGSC Student, 19 Nov 64.

[27]Questionnaire, Capt. C. D. Sarkiss, Inf., USA, USACGSC Student, 19 Nov 64.

[28]Questionnaire, Maj. C. J. Gearin, Jr., Inf., USA, USACGSC Student, 19 Nov 64.

that night close air support was of doubtful value. Major Hull's comments summarized the mutual position as follows:

> The flare ships were extremely effective particularly in causing the VC to break off an attack against a post or watchtower. I have doubts about the effectiveness of close air fires at night. They weren't properly controlled.[29]

This lengthy but pertinent recording of the opinions of on-the-spot observers can be summarized by saying that, in general, 1963 saw the beginning of a widespread increase in use of and emphasis on night air operations in Vietnam, particularly in the area of illumination. During this period of time, ground and air forces became fully aware of the potential for operations at night under protective cover of air-dropped flares and airborne supporting fires.

Several additional events and statistics can be cited to round out the 1963 history of night air operations in Vietnam.

In an article based on 2d Air Division Operational Summaries and published in Air University Review, several key operations were discussed by the PACAF Intelligence Branch which document increased use and effectiveness of night air support during 1963.

> On various occasions the flare strike teams have conducted a running battle with the Viet Cong following break-off of the outpost attack. One instance of note occurred on the night of 20 June 1963 when a large force of regular Viet Cong was driven back by A-1H night air strikes from their attack on an outpost 25 miles east of Soc Trang in the delta area. The Viet Cong retreated in two groups, one by land and the other by sampan. With paraflares lighting the retreat routes, elements of tactical fighters pressed the fleeing enemy throughout the night.[30]

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[29] Questionnaire, Capt. Robert L. Hull, Inf., USA, USACGSC Student, 19 Nov 64.

[30] Lt. Col. James F. Sunderman, "Air Operations in Viet Nam," Air University Review, XV No. 6 (Maxwell Air Force Base, Alabama: Aerospace Studies Institute, Sep-Oct 64), p. 86.

Several other operations were noted in which weather played a dominant role.

On the night of 22 July 1963, for example, the Viet Cong struck an outpost situated on the bank of a river about 15 miles northwest of Bien Hoa. Rain showers were drenching the countryside from a 200- to 500-foot broken ceiling when a pair of VNAF T-28's was scrambled at Bien Hoa Air Base to aid the outpost.

Operating under a low ceiling in the rain, they spotted the Viet Cong in a wooded area near the fort. With minimum paraflare visibility, the T-28's made four bomb runs on the insurgent force. During these strikes they noted another enemy force attempting to overrun the fortress from the river side and diverted the attack, making repeated rocket and strafing runs on this group of Viet Cong.

Advised by the USAF C-47 flareship that the enemy had broken off the attack, the T-28's returned to their base. The pilots reported an estimated 40 Viet Cong killed. Several days later the official ground-confirmed reports indicated 68 dead Viet Cong.

One week later, at 2100 hours on 29 July 1963, a strong Viet Cong contingent struck another outpost 17 miles north of Bien Hoa. Responding to the outpost call for help, a B-26 light bomber took off in a heavy rain. Breaking out of the overcast at 3000 feet altitude, the pilot called for and got a radar vector to the general outpost area. Descending through the overcast, he broke out at 600 feet above the heavily wooded, hilly area. Darkness and rain enveloped the countryside, effectively hiding the outpost. The crew undertook a widening circular search for the fort and within ten minutes spotted it about six nautical miles north of the radar plot. The pilot immediately called radar control for a flareship vector through the overcast to the site, and within minutes the C-47 appeared. By the light of paraflares and directed by a flaming arrow signal from inside the fortress, the bomber crew worked over the insurgent force with seven low-angle strafing and rocket passes. Heavy enemy small-arms fire was encountered on each pass. Since the low ceiling and extremely poor visibility made conventional bombing attack procedures impossible, the crew improvised a strike plan. Lining up the target area on the fort lights, they made a treetop approach on each bomb run, pulling up into the overcast and pickling off their bombs at 1000 feet--lobbing them into the enemy ranks. . . . The Viet Cong broke off the attack and fled. The outpost was saved, and the paraflare/attack team returned to its base.[31]

The 23rd SWAD was also active in night operations during 1963. From a rather inauspicious beginning during the 16 March to 31 July 1963

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[31] *Ibid.*, pp. 88-89.

period, during which only 3 night illumination missions were flown out of a total of 1,158 sorties,[32] the detachment began to emphasize night surveillance operations which had a definite deterrent value in control of VC activities at night.

> On the night of 24 Oct 63, during a night observation mission, a Mohawk observed a "red star cluster" over Binh Duong, Sector XT885970. The aircraft was over the outpost under attack in 3 minutes. Automatic weapons fire was observed at 5 different points. As the aircraft orbited the area the Viet Cong withdrew. The aircraft remained in the area for 45 minutes without further incident.[33]

> At 251955 Oct. (1963) during a night observation mission, the Mohawks observed a heavy volume of fire at Ben Cat, Binh Duong Province vicinity of XT731333. Immediate report was made to division TOC by Mohawk, artillery fired illumination and the Viet Cong withdrew.[34]

The importance of illumination in reconnaissance missions was emphasized. "Mohawk pilots have expressed the opinion that in remote areas on dark nights, reconnaissance of specific targets without artificial illumination is unsatisfactory."[35]

One final night air activity which developed late in 1963, and which is not documented in any other source, was the fropping of flares by U. S. Army TO-1D aircraft in support of hamlets under night attack. Major Kark, who commanded the 73d Aviation Company (Airplane surveillance) (Light), indicated in his questionnaire that during the final

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[32]U. S. Army Concept Team in Vietnam, "Supplement to Final Test Report, Employment of OV-1 (Mohawk) Aircraft in Support of Counter-insurgency Operations" (Saigon, Vietnam: U. S. Army Concept Team in Vietnam, 9 Sep 63), p. 2.

[33]U. S. Army Concept Team, Vietnam, "Mohawk Aircraft in the Target Acquisition Role" (Saigon, Vietnam: U. S. Army Concept Team, Vietnam, 1 Feb 64), p. 24.

[34]Ibid., App 1, Annex A, p. A-7.

[35]Ibid., p. 37.

months of 1963, aircraft of his command, assigned to the various division headquarters throughout the country, were often called upon to drop flares when the C-47 or C-123 flareships from Bien Hoa and Tan Son Nhut were committed in other areas and his aircraft were the only available source of illumination. Because these missions were flown strictly on a local basis to satisfy the requirements of a specific division commander, no official record was kept of the operations. However, Major Kark commented that over fifty flares per aircraft were dropped during the last two months of 1963 and the first five months of 1964.[36]

The year 1963 marked the first significant steps toward development of an efficient and potent night air capability. The year 1964 saw further expansion of this potential and demonstrated even more strongly the evolution of night air operations as doctrine for counter-insurgency.

A Statistical Analysis, 1964

Statistics are often meaningless unless someone takes time to analyze their meaning from a logical and unbiased approach. Statistics contained in the MACV MILREPS are no exception to this premise. Quantities of data are presented in easy to understand form, but it is left to the reader of the MILREPS to determine just what the figures mean and how they should be interpreted. There is always a danger that the analyst may misinterpret or purposely juggle data to support pre-conceived conclusions. There is also a possibility that data which does not support a thesis may simply be excluded from the analysis. In this

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[36] Questionnaire, Maj. John S. Kark, Inf., USA, USACGSC Student, 19 Nov 64.

particular analysis, the author has extracted all available data from the reports and presented it in raw form on charts which were then analyzed to determine what trends or conclusions might be drawn. Conclusions have been made only after careful consideration of all factors which had a bearing on reported night air activities.

The MACV MILREPS were chosen as the basis for a statistical examination of night air operations in Vietnam primarily because they represent the only available documents, in a standardized form, containing appropriate material which may be reduced to analyzable terms. The MILREPS are weekly consolidations and summarizations of daily operational activity and situation reports submitted by Army, Air Force, Navy, and Marine units and detachments throughout Vietnam. As such, they contain some editorializing. However, data on aircraft status, sorties, and missions is considered accurate, as is data on ground operations.

Unfortunately, from the historian's standpoint, detailed record keeping and precise documentation of military activity in Vietnam has been undertaken only recently. The Aircraft Losses Operations Analysis Working Group prefaced their mid-1964 study on minimizing aircraft losses from ground fire with the statement:

> The greatest limitation encountered by the working group was a lack of sufficient data in similar form. Each service maintained different types of records and the information was not easily translatable into common terms.[37]

The MACV MILREPS in their present standardized (but still changing) form are only a year old as of the writing of this paper. The

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[37]Aircraft Losses Operations Analysis Working Group, "Minimizing Aircraft Damage and Losses from Enemy Ground Fire" (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, 30 Jul 64), p. 4. MACV Directive 335-7 standardized service-wide reporting of antiaircraft fires and hits, but this directive was not implemented until 17 Jan 64.

first report was published as of 21 March 1964 and contained data for the ten day period from 11 March through 21 March. Subsequent reports cover a single week's activities.

Data contained in the charts on the following pages covers the period from 11 March 1964 through 31 January 1965. It was during this forty-six week period that tactics and techniques for night air operations which had been slowly developing during 1962 and 1963 began to evolve as doctrinal employment in counterinsurgency warfare.

Each of the charts is prefaced by a brief statement of the purpose of the chart, a discussion of the apparent trend(s) which the data illustrates, additional factors which might influence these trends, and one or more conclusions which may be drawn from this analysis. The chapter will conclude with a final analysis of the meaning and overall conclusions which may be drawn from the data presented.

Chart 1

NIGHT ATTACKS ON NEW RURAL LIFE HAMLETS (NRLH'S)
AND OUTPOSTS

Purpose: To illustrate total number of VC night attacks per week on NRLH's and outposts.

Apparent trend: The overall trend appears to be preceptibly downward.

Factors influencing the trend: The alternating peaks and valleys of activity illustrate the apparent centralization of VC planning and execution of attacks on a country-wide basis. Periods of extreme activity followed by lulls are characteristic of Viet Cong tactics.

Because the monsoon season does not affect the entire country during any one period, weather apparently does not have an important influence on the trend. The VC may shift their activities from one part of the country to another to take advantage of whatever weather conditions they desire for an attack.

The political coups which took place during this forty-six week period undoubtedly influenced the VC attack plans. (The dates of the coup d'etat were 13 August, 1 November, 26 December 1964, and 20 January 1965.) One trend which is noticeable in all of the charts is reduction in enemy and friendly military activity during the weeks immediately following a coup. This is considered to be due to the "wait and see" attitude of both parties to the conflict. As each newly formed government began to stabilize, the pattern of military action again began to rise.

Conclusions: If we discount the relatively abrupt changes in numbers of attacks following the coups, the average trend is still downward. On the basis of the trend contained in this chart we might conclude

that the VC are becoming more reluctant to attack NLRH's and outposts at night, or that their emphasis is slowly shifting to other more lucrative tactics.

CHART 1

NIGHT ATTACKS ON NEW RURAL LIFE HAMLETS (NRLH) AND OUTPOSTS

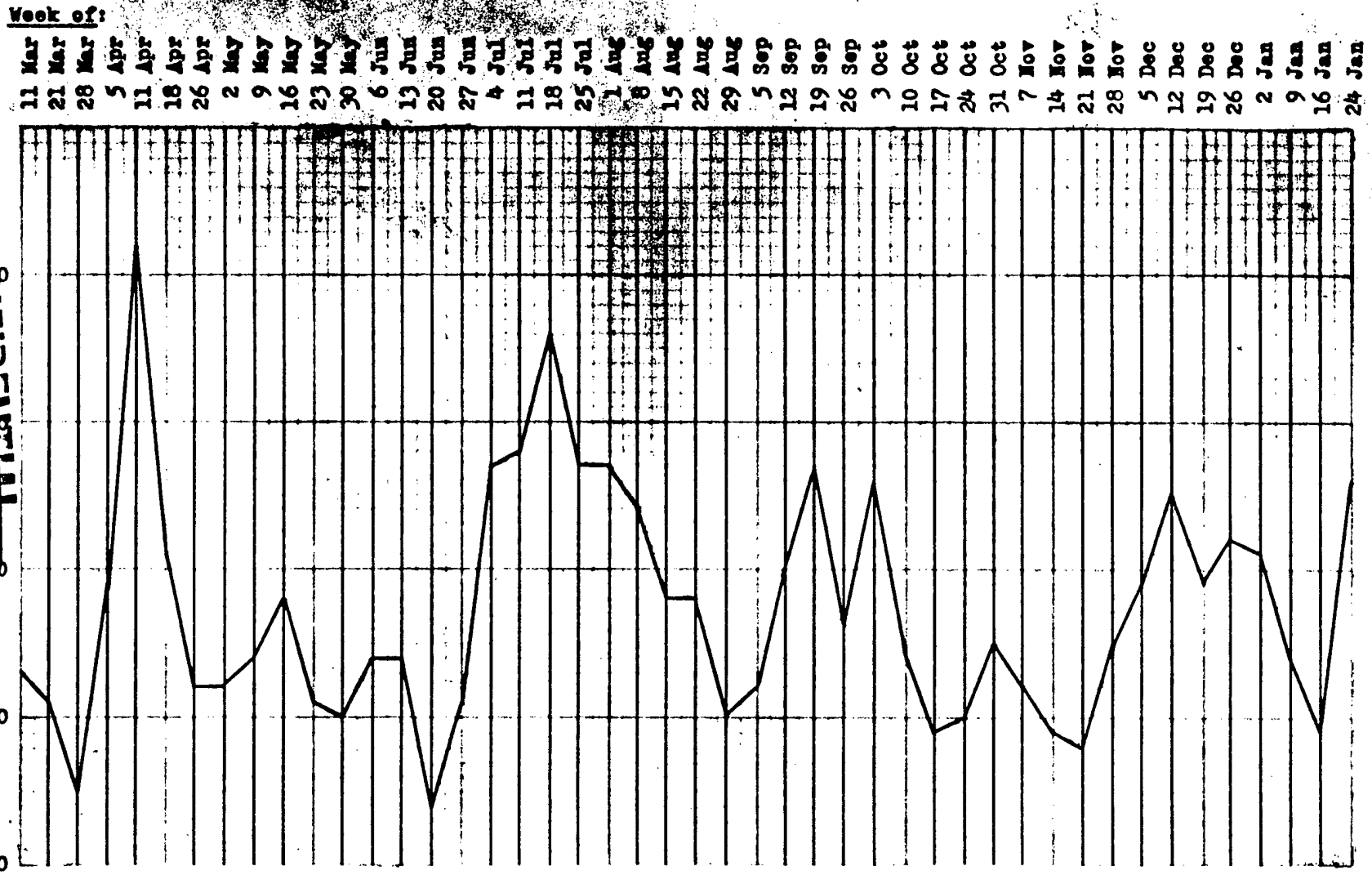

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Chart 2

FLARESHIP RESPONSE TO VC ATTACKS
ON NLRH'S AND OUTPOSTS

Purpose: To illustrate the relative degree to which flareships responded to night attacks on NLRH's and outposts.

Apparent trend: Prior to 1 May 1964, attacks consistently exceeded the numbers of flareships responding. Subsequent to the week of 16 May 1964, however, total flareship tasks equal or surpass total attacks by relatively significant numbers. Attacks totaled 806 during the 46 week period, while flareship tasks totaled 1047. The overall trend in requirements for flareships in support of defensive operations also appears to be downward. This is considered a natural trend in view of the downward trend in attacks.

Factors influencing the trend: At the beginning of 1964, night air operations in Vietnam were keyed primarily to response to VC night attacks on NLRH's and outposts. The format in which the MILREPS present the night flare and fighter support reflects this emphasis. The emphasis was apparently exerted at the operator levels which may account for the success indicated in providing flareships to all facilities reporting attacks during the last seven months of 1964. It should be noted that the flareship response is measured in tasks rather than sorties. On numerous occasions, one flareship provided flare support to more than one hamlet or post under attack, thereby performing two or more tasks.

Conclusions: There are several conclusions which might be drawn from this chart. One is the apparent emphasis that was placed on providing flareships for all hamlets and outposts under attack

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subsequent to the middle of May. The other conclusion which might be made is that increased use of flareships has been one of the factors causing reduction in attacks, or at least has aided in maintaining the frequency of attacks at a controllable level. Major Gorvad, a Special Forces "B" Detachment Commander in IV Corps Tactical Zone, whose experience in Vietnam was primarily during the early months of 1964, supported this latter conclusion in his questionnaire when he stated:

> I had approximately 11 requests for flareships for my camps . . . the illumination support was outstanding and, while I realize there is a great difference in cost between a mortar round and a flare round, it enabled our gunners to fire HE and WP with their mortars rather than illuminating rounds. The flareship would drop, our observers would pick up the targets, and the gunners would fire--worked real well. The bonus effect, of course, was provided by the reluctance of the VC to attack and expose themselves while the area was illuminated. . . . In my opinion, the flareships provided the single most important means in reducing the number of overrun outposts.[38]

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[38]Questionnaire, Maj. Peter L. Gorvad, Inf., USA, USACGSC Student, 19 Nov 64.

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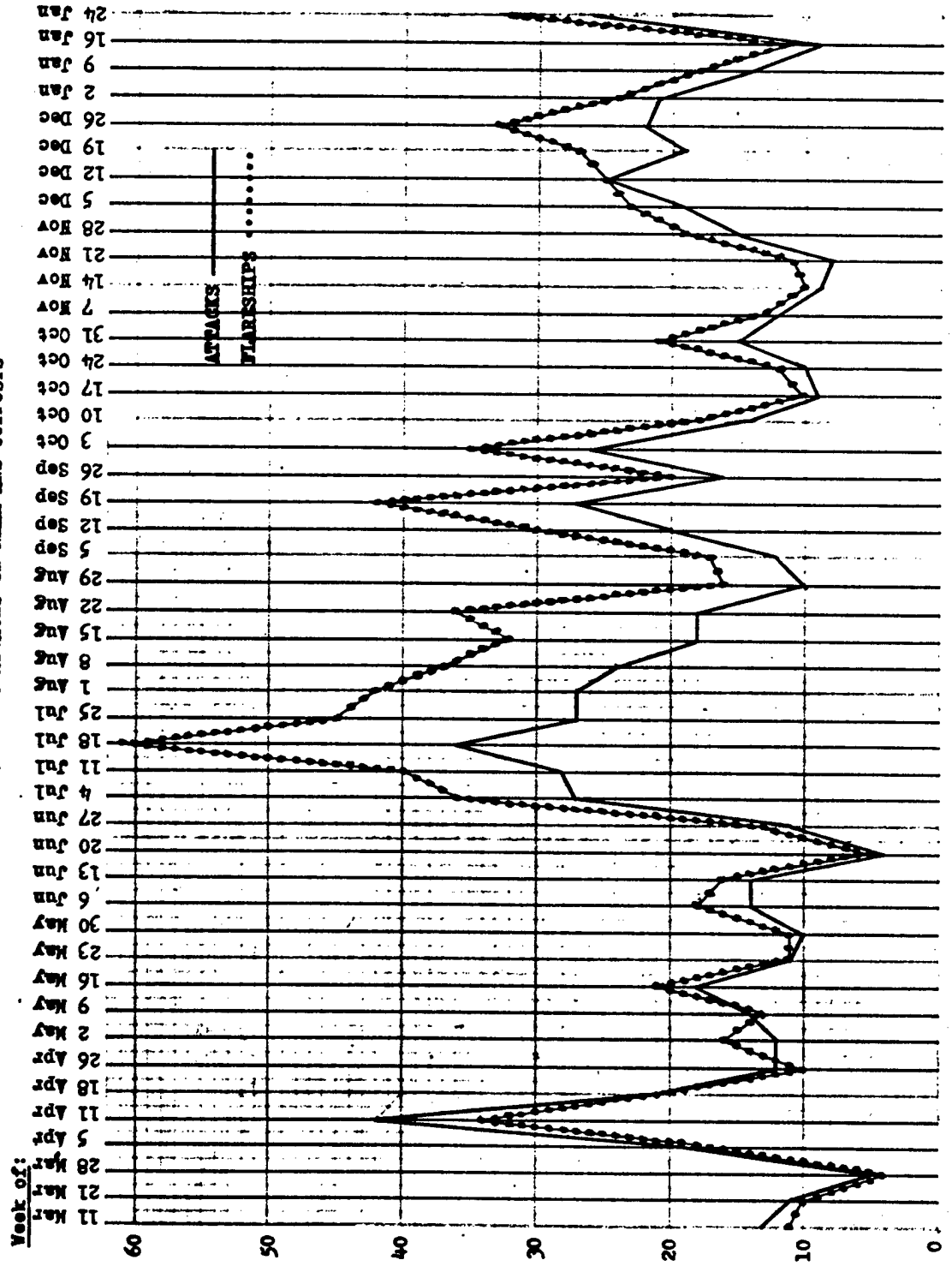
CHART 2

FLARESHIP RESPONSE TO VC ATTACKS ON HERH AND OUTPOSTS



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TOTAL FLARESHIP SORTIES FLOWN

Purpose: To illustrate response of flareships to requests from all operations activities requiring illumination.

Apparent trend: The overall trend in use of flareships is definitely upward.

Factors influencing the trend: Again, periods immediately following coups show marked decreases in flareship activity. The unsettling effect of the coups on all military operations is readily apparent in this chart. The increased number of aircraft available for use in flare missions as the year progressed also undoubtedly contributed to the upward trend in sorties flown.

Conclusions: In comparison with Chart 2, which showed a downward trend in flareship utilization for support of outposts under attack, Chart 3 illustrates the increase in overall flareship operations and represents a significant trend toward greater utilization of flareships in support of offensive operations. As more flareships were relieved of the requirement to support beleagured outposts, they were apparently being utilized more fully in offensive actions. During the first half of this 46 week period, total flareship sorties exceeded flareships required to support hamlets and posts under attack by only 15 sorties. During the second half of the period, 250 sorties were flown in excess of those called for to support defensive operations. These statistics strongly support the thesis that night air operations are evolving as doctrine in counterinsurgency warfare.

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CHART 3

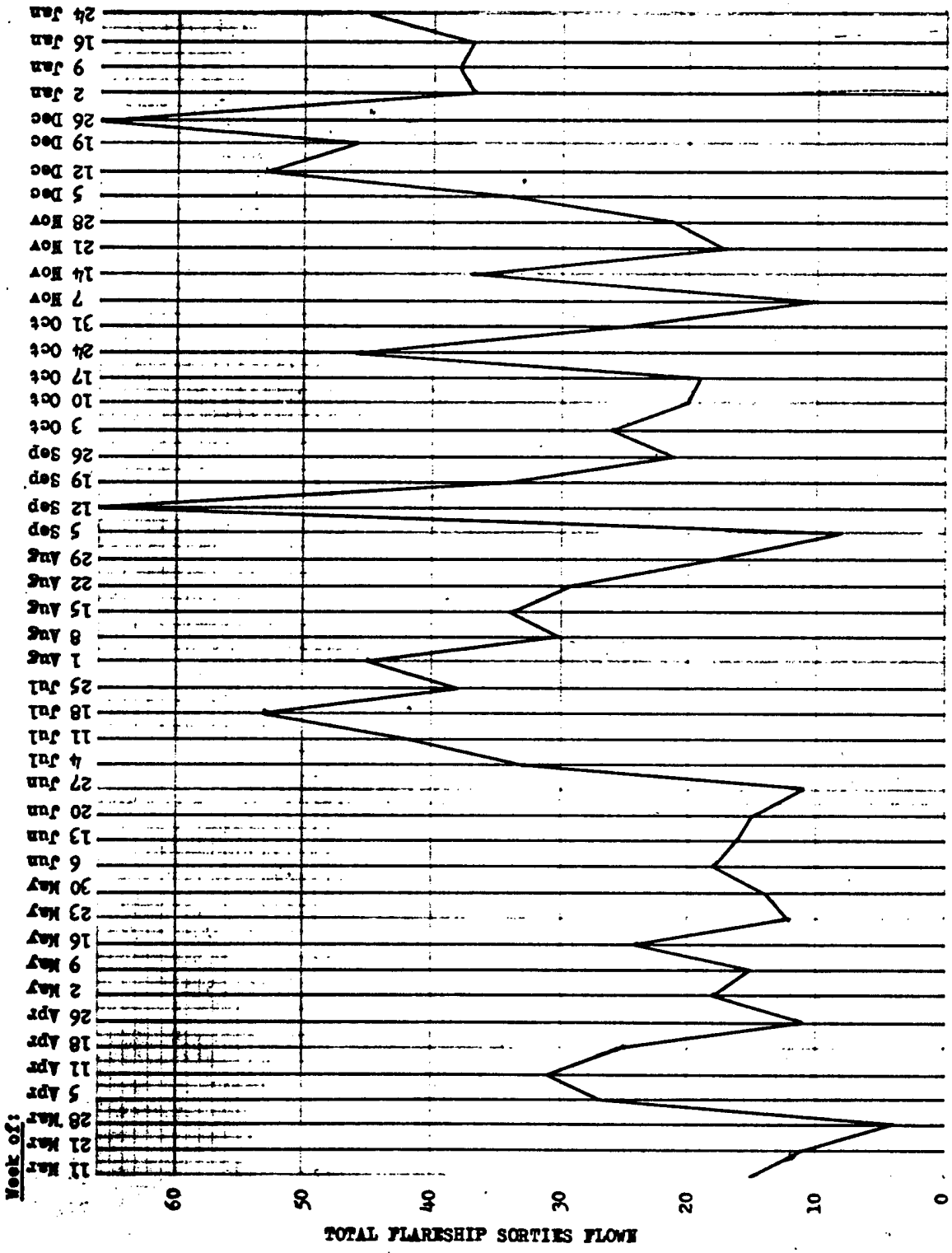

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Chart 4

STRIKE AIRCRAFT SUPPORT TO
NLRH'S AND OUTPOSTS

Purpose: To illustrate the relative degree to which strike aircraft responded to night attacks on NLRH's and outposts.

Apparent trend: The only trend readily discernible is the lack of consistency from week to week in providing strike aircraft to assist NLRH and outpost defenders. We might consider that the general trend of strike aircraft utilization is downward on this type of mission, however, as illustrated in Chart 2, this trend simply follows the downward trend of attacks. Strike aircraft sorties flown at night in support of defensive ground operations totaled 815; an average of slightly more than 1 sortie per attack (815 sorties versus 806 attacks).

Factors influencing the trend: Availability of strike aircraft for night operations is largely dependent on the daytime level of flying activity. During the summer months (July, August, September), daytime weather conditions in the delta region of South Vietnam are not conducive to a great amount of air activity; therefore, during this time period more aircraft may have been available to respond to requests for support during the better flying conditions of the night. The significant low in strike aircraft support which occurred during the first two weeks of November was undoubtedly caused by the state of military and political upheavel associated with the VC attack on Bien Hoa Airfield and the two day coup which took place on the first and second of November. All air activity was halted for four days immediately following this coup.

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Conclusions: One conclusion which may be drawn from this comparison is that periods of intensive strike aircraft activity tend to deter VC attacks during several subsequent weeks. When strike aircraft are not provided for each hamlet or outpost under attack, the following weeks appear to bring a greater number of attacks. Strike aircraft, in conjunction with flareships, provided they are used consistently, may be a significant deterent to VC night attack.

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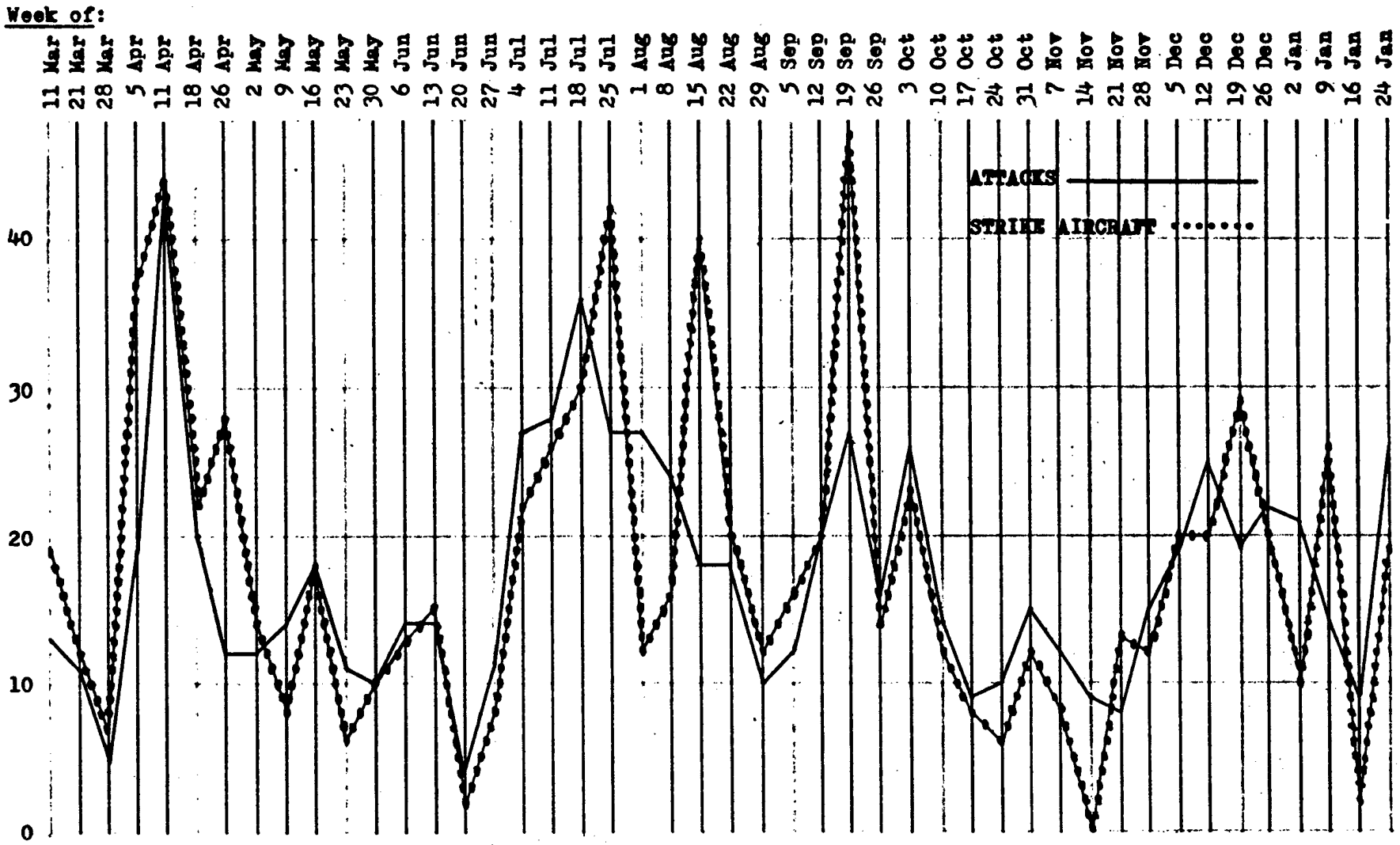
CHART 4

STRIKE AIRCRAFT SUPPORT TO NLRH AND OUTPOSTS



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For comparison purposes it would be desirable to have a chart which illustrated the total night air activity by strike aircraft. Conclusions might then be drawn on a statistical basis, which supported the increased use of strike aircraft in offensive as well as defensive night air operations. Unfortunately, statistical data in the MILREPS does not differentiate between day and night air activity other than in the data presented on air support to NLRH and outposts, which is all defensive in nature. Strike aircraft sortie statistics are combined in four categories: close air support, interdiction, armed reconnaissance, and air cover. No breakout of day versus night operations is made.

To document the fact that considerable numbers of night strike sorties of an offensive nature have been flown, we were forced to turn to the narrative portion of the MILREPs. Typical comments which indicate a significant night offensive air effort follow:

> A LARGE SCALE NIGHT OPERATION WAS FLOWN IN THE EARLY MORNING HOURS OF 29 MARCH [1964] WHEN COL. KY, THE VNAF COMMANDER, LED 16 FIGHTER BOMBERS ON A BOMBING STRIKE AGAINST A VC CONCENTRATION AT YC610530.[39]

At 120500 April 1964 during Joint Operation PHUONG HOANG, "ARTILLERY, FLARESHIP, AND CLOSE AIR SUPPORT WERE FURNISHED. VNAF AND USAF FLEW 10 STRIKES AND TWO FLARESHIP SORTIES, REPORTEDLY KILLING 5 VC."[40] The MILREP for the week of 20-27 June 1964 stated that, "THE COMBAT AIR ACTIVITY WAS HIGHLIGHTED BY A 14 AIRCRAFT (A-1H) NIGHT ATTACK ON A VC CONCENTRATION IN I CORPS ON THE NIGHT OF 23 JUN 64."[41] During the

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[39] USMACV, op. cit., MILREP Week of 28 Mar 64, p. 10.

[40] Ibid., MILREP Week of 11 Apr 64, p. 11.

[41] Ibid., MILREP Week of 20 Jun 64, p. 14.

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week of 4-11 July 1964, the ARVN conducted Operation CHINA NGHIA 36. This was the first operation in which armed Army helicopters were used for suppressive fire support at night. The action was described as follows:

> AT 1735 A REQUEST FOR U. S. ARMY ARMED HELICOPTERS WAS RECEIVED THROUGH THE VNAF AIR REQUEST NET. THE REQUEST WAS SIMULTANEOUSLY PROCESSED BY ARMY AND VNAF. TWO VNAF A-1H AIRCRAFT WERE AIRBORNE AT 1805, REPORTED THEY COULD NOT ESTABLISH RADIO CONTACT, RETURNED TO BASE AND LANDED WITH ORDNANCE. U. S. ARMY AVIATION FLEW 64 ARMED HELICOPTER SORTIES WITH THE FIRST TWO SORTIES AIRBORNE AT 1745. SUPPRESSIVE FIRE MISSIONS WERE FLOWN CONTINUOUSLY UNTIL 0200 WHEN WEATHER FORCED A TWO HOUR DELAY. AT 0400 SUPPRESSIVE FIRE MISSIONS WERE RENEWED AND CONTINUED UNTIL 0815. . . . AT 2015 THE FIRST OF FIVE FLARE AIRCRAFT (2 VNAF, 3 USAF) ARRIVED IN THE AREA. WITH THE EXCEPTION OF TWO HOURS, FLARE SUPPORT WAS DELIVERED THROUGHOUT THE NIGHT WITH A TOTAL OF 297 FLARES BEING DROPPED.[42]

The MILREP further commented on this operation and observed that,

> THE EXTENSIVE FLYING PERFORMED DURING THE NIGHT OF 10-11 JULY BY ARMY HELICOPTERS IS AN INDICATION OF THE GROWING CAPABILITY OF ARMY AVIATION TO RENDER SUPPORT DURING HOURS OF DARKNESS. THIS COULD PROVE TO BE VERY VALUABLE TO GVN FORCES IN FUTURE NIGHT OPERATIONS AGAINST THE VC.[43]

Several other specific references indicate additional utilization of armed helicopters for night offensive air support. These operations were conducted during the week of 18-25 July 1964.

> ARMED HELICOPTERS FROM THE UTT COMPANY ESCORTED TRANSPORT HELICOPTERS IN THE III CORPS TACTICAL ZONE ON A NIGHT RESUPPLY MISSION, AND ENGAGED HOSTILE GROUND FORCES WHILE THE UH-1B SUCCESSFULLY COMPLETED THEIR OFF-LOADING OPERATIONS.[44]
>
> . . . . . .
>
> THE COMBINED FORCES OF THE OPERATION LAUNCHED AN ATTACK AT 2000 HOURS TO RECOVER THE FIVE M113 CARRIERS THAT HAD BEEN PROTECTED BY TWO INFANTRY PLATOONS. WITH THE AID OF THE ILLUMINATION PROVIDED BY VNAF AND THE SUPPRESSIVE FIRE OF TEN U. S. ARMY ARMED HELICOPTERS, THE FIVE M113 WERE EVACUATED BY 2115 HOURS.[45]

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[42] Ibid., MILREP Week of 4 Jul 64, pp. 10-11.

[43] Ibid., p. 12.

[44] Ibid., MILREP Week of 18 Jul 64, p. 3.

[45] Ibid., p. 13.

During the week of 25 July-1 August 1964 the following night offensive air operation was reported:

> ON THE EVENING OF 30/31 JULY 64, THE VNAF PLANNED AND LAUNCHED A NIGHT STRIKE AGAINST A SECRET VC AMMUNITION DUMP AND TROOP CONCENTRATION IN BIEN HOA PROVINCE (YT060190). DURING THE PERIOD 302245H TO 310025H JULY, A VNAF FLARESHIP ILLUMINATED THE AREA BY DROPPING 29 FLARES. THEN A FLIGHT OF FOUR VNAF A-1H USING NAPALM AND WHITE PHOSPHOROUS BOMBS ATTACKED THE TARGET BETWEEN 2305H AND 2335H. THIS STRIKE FOLLOWED AT 2355H WITH A SECOND ATTACK BY TWO A-1E EMPLOYING THE SAME GENERAL ORDNANCE LOADS. ALTHOUGH THE RESULTS WERE OBSCURED BY DARKNESS, THREE LARGE SECONDARY EXPLOSIONS WERE REPORTED IN THE TARGET AREA.[46]

During October, additional night missions of an offensive nature were flown.

> TWO SPECIAL NIGHT MISSIONS WERE SCHEDULED FOR WAR ZONE C, AND BOTH WERE COMPLETED. ONE MISSION CONSISTING OF A VNAF C-47 FLARESHIP AND 2 VNAF A-1H PROCEEDED FROM THE CITY OF TAY NINH NORTH ALONG HIGHWAY 22 SEARCHING FOR VEHICULAR TRAFFIC. . . . THE SECOND MISSION, A FLIGHT OF THREE USAF A-1E, DROPPED ORDNANCE ON SELECTED TARGETS, BUT THE RESULTS WERE UNOBSERVED.[47]
>
> . . . . . .
>
> ON 4 OCTOBER . . . HELICOPTERS PERFORMED VISUAL SURVEILLANCE AND SUPPRESSIVE FIRE MISSIONS THROUGHOUT THE AFTERNOON AND EVENING UNTIL 2300 HOURS.[48]
>
> FOUR NIGHT FLARE MISSIONS WERE CONDUCTED IN BINH DINH PROVINCE DURING THE WEEK. MISSIONS WERE CONDUCTED ALONG ROADS AND RAILROADS BY AIRCRAFT OF THE 52ND AVN BN WITH THE OBJECT OF DETECTING VC MOVEMENT OR AMBUSH EFFORTS.[49]
>
> NIGHT SURVEILLANCE MISSIONS WERE CONTINUED IN I AND II CORPS TACTICAL ZONES, ALONG THE COASTAL RAILROAD AND HIGHWAY NUMBER 1, TO REPORT ON VC SABOTAGE ACTIVITIES.[50]

Although these latter two operations are not truly offensive in nature, they do represent night air <u>action</u> rather than <u>re</u>action. During the

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[46] <u>Ibid</u>., MILREP Week of 25 Jul 64, pp. 11-12.

[47] <u>Ibid</u>., MILREP Week of 3 Oct 64, p. 14.

[48] <u>Ibid</u>., p. 15.

[49] <u>Ibid</u>., MILREP Week of 17 Oct 64, p. 13.

[50] <u>Ibid</u>., MILREP Week of 24 Oct 64, p. 3.

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first week in November 1964, primarily in response to the VC attack on Bien Hoa, the VNAF conducted significant night offensive air operations.

> BETWEEN 070155H AND 071120H NOV VNAF A-1H FIGHTER-BOMBERS FLEW A TOTAL OF 45 ID [interdiction] SORTIES AGAINST VC CONCENTRATIONS IN ZONE D. A TOTAL OF 82 TONS OF GP AND FRAGMENTATION BOMBS AND 10,000 ROUNDS OF 20MM WERE EXPENDED. PILOT REPORTS TARGET AREA OBSCURED BY DARKNESS AND TREES.[51]

USAF aircraft also participated in this "get even" operation. Eight A-1E's dropped 18.4 tons of GP and WP bombs.

Due to the fact that the MACV MILREPS include narrative comments only on major ground and air operations, it is impossible to accurately determine the number of night offensive air sorties flown during 1964. However, the operations which were mentioned show a decided trend by the VNAF, USAF, and U. S. Army Aviation toward utilizing more fully the hours of darkness for offensive as well as defensive operations. This is a key trend which supports evolving doctrine for exploitation of night air operations in Vietnam.

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[51] *Ibid.*, MILREP Week of 31 Oct 64, p. 11.

Chart 5

TOTAL FLARES DROPPED IN SUPPORT OF
ALL NIGHT AIR OPERATIONS

Purpose: To illustrate the actual numbers of flares dropped in support of NLRH's and outpost defense, and to compare these figures with a hypothetical number of flares dropped in support of offensive air operations.

Apparent trend: The solid line on this chart shows the number of flares actually dropped in support of NRLH's and outposts under night attack. No significant trend or characteristic other than wide variation in numbers of flares dropped from week to week can be noticed. The pattern follows the pattern of attacks. The dashed line indicates the sum of flares actually dropped on defensive missions and the number of flares which we computed could and should have been dropped from flareships on offensive air missions. These latter figures were computed by dividing the total flares actually dropped (55,715) by the total defensive flareships (1047); an average of 53.2 flares dropped per flareship. We then multiplied the weekly flare sorties, in excess of those flown in support of defensive operations, by 53.2 to determine a weekly projected flare drop figure for offensive flareships. It is recognized that this is highly conjectural, nevertheless, with no other accurate means to determine the actual flares dropped, this technique of computation is considered to be the most realistic possible and the results are felt to be reasonable. The trend in the total flares dropped (dashed line) is unmistakably upward. This trend is defensible in view of the many MILREP references to offensive night

air operations during the latter half of the 46 week period. The one extreme figure (4370), during the week of 12-19 September, was compiled during a period of extensive night operations. The MILREP for that week stated:

> THE C-123 FLARESHIPS WERE USED EXTENSIVELY THROUGHOUT III AND IV CTZS THIS WEEK IN RESPONSE TO A THREEFOLD INCREASE IN REQUIREMENTS FOR FLARE SUPPORT.[52]

Factors influencing the trend: In computing total flare figures we have not adjusted for the possibility that offensive air operations may require more or less flares per operation than defensive operations. No adjustment was made because no constant factor will necessarily apply, and there is no source in history from which we may extract experience factors for flare support in counterinsurgency.

The factor of weather undoubtedly influenced the trend, but again to what degree is difficult if not impossible to determine. Over a period which is very nearly a full year, it is felt that the factor of weather will become neutral insofar as the long range trend is concerned.

Conclusions: There are several conclusions which may be drawn from this chart. There was a definite increase in night illumination being provided for combined defensive and offensive ground operations during the last six months of the time period under consideration. When we consider that each air dropped flare provides illumination for approximately 3 minutes, and that an average of 217 flares were dropped each night of the 46 week period (total flares = 69,813 ÷ 322 days = 217 flares per day), theoretically, at least, we provided a capability which could have illuminated one point continuously every minute of darkness during the entire 46 week period.

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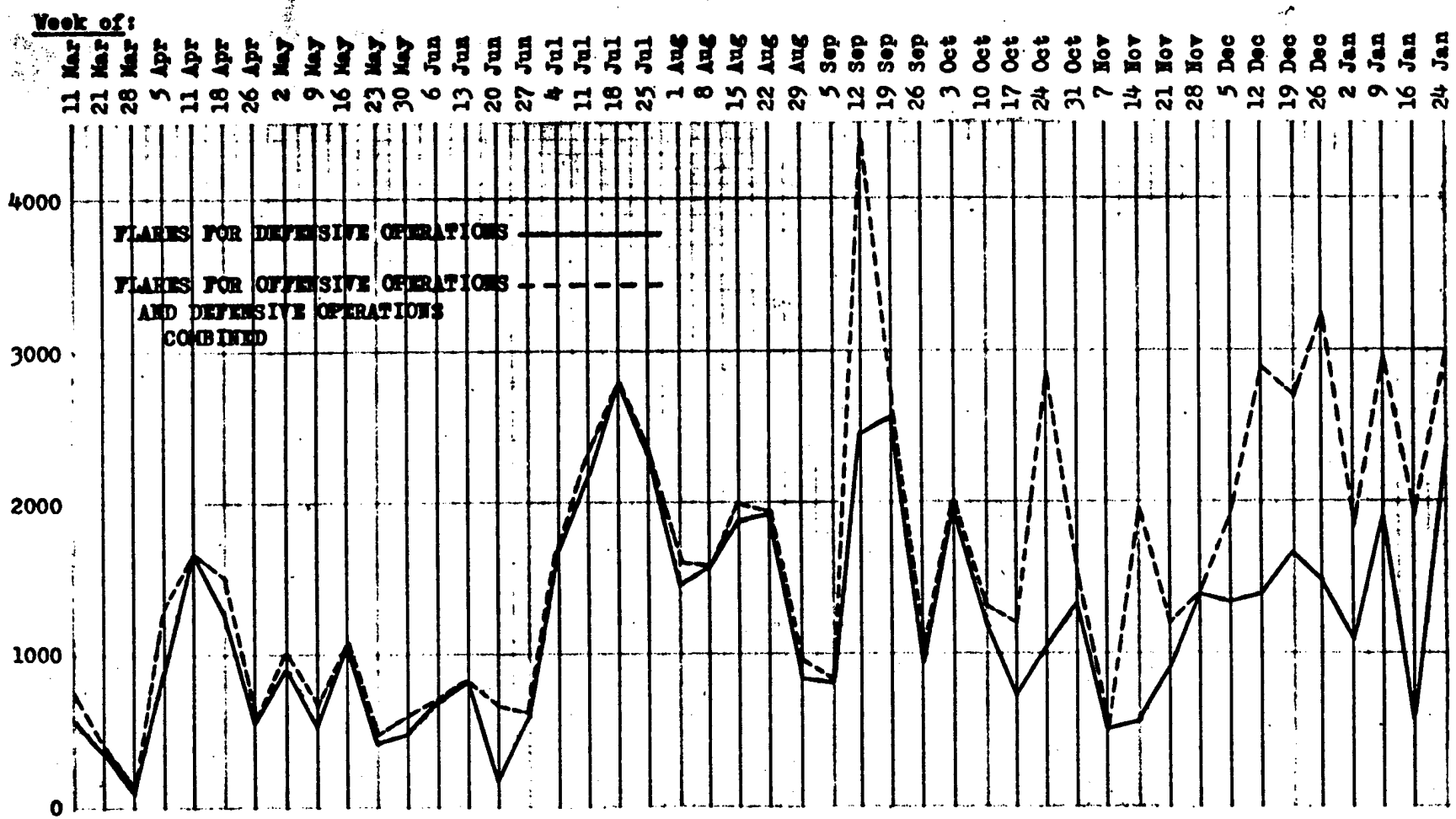
[52] Ibid., MILREP Week of 12 Sep 64, p. 17.

This is obviously an impracticality for many reasons, however, this mathematical exercise illustrates dramatically the scope and significance of the night illumination effort conducted during 1964.

CHART 5

TOTAL FLARES DROPPED IN SUPPORT OF ALL NIGHT AIR OPERATIONS



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TOTAL AIR TASKS

Purpose: To illustrate weekly totals of air tasks flown in Vietnam during 1964 by all services (solid line), and a breakdown of air tasks flown by USAF/VNAF aircraft (dotted line) in relation to air tasks flown by U. S. Army and Marine Corps aircraft (dashed line). This chart should be examined comparatively with Chart 7.

Apparent trends: The first half of the forty-six week period shows very little overall change in total air tasks or in tasks flown by either the Air Forces or Army/Marine forces. However, beginning about 1 September 1964, the trend for both air force and army air activity is noticeably higher; almost doubling during the following ten week period, and tripling its original level during the final ten weeks of the period. Total tasks flown by USAF/VNAF equaled 104,688. The U. S. Army/Marine Corps tasks totalled 186,366. Again it should be noted that these are tasks and not sorties. There is one discrepancy in these figures however, due to the fact that VNAF reports only one task per sortie while USAF and U. S. Army/Marine Corps units may accomplish and report more than one task per sortie.

Factors influencing the trends: The increased input of aircraft, equipment, and personnel during the late summer months of 1964 obviously influenced the overall air activity of all services from that time forward. Improving weather conditions in the VC infested delta region, after the summer monsoon, undoubtedly may be credited for some of the increase in air activity. The coup influence is

noticeable particularly during the first week in November when all air activity was curtailed for a four day period.

Conclusions: There is only one conclusion which may be drawn from this chart, and that is the obvious increase in overall air activity by all services during 1964. This increase should be kept in mind when examining Chart 7 which deals with service participation in night aerial illumination tasks.

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CHART 6

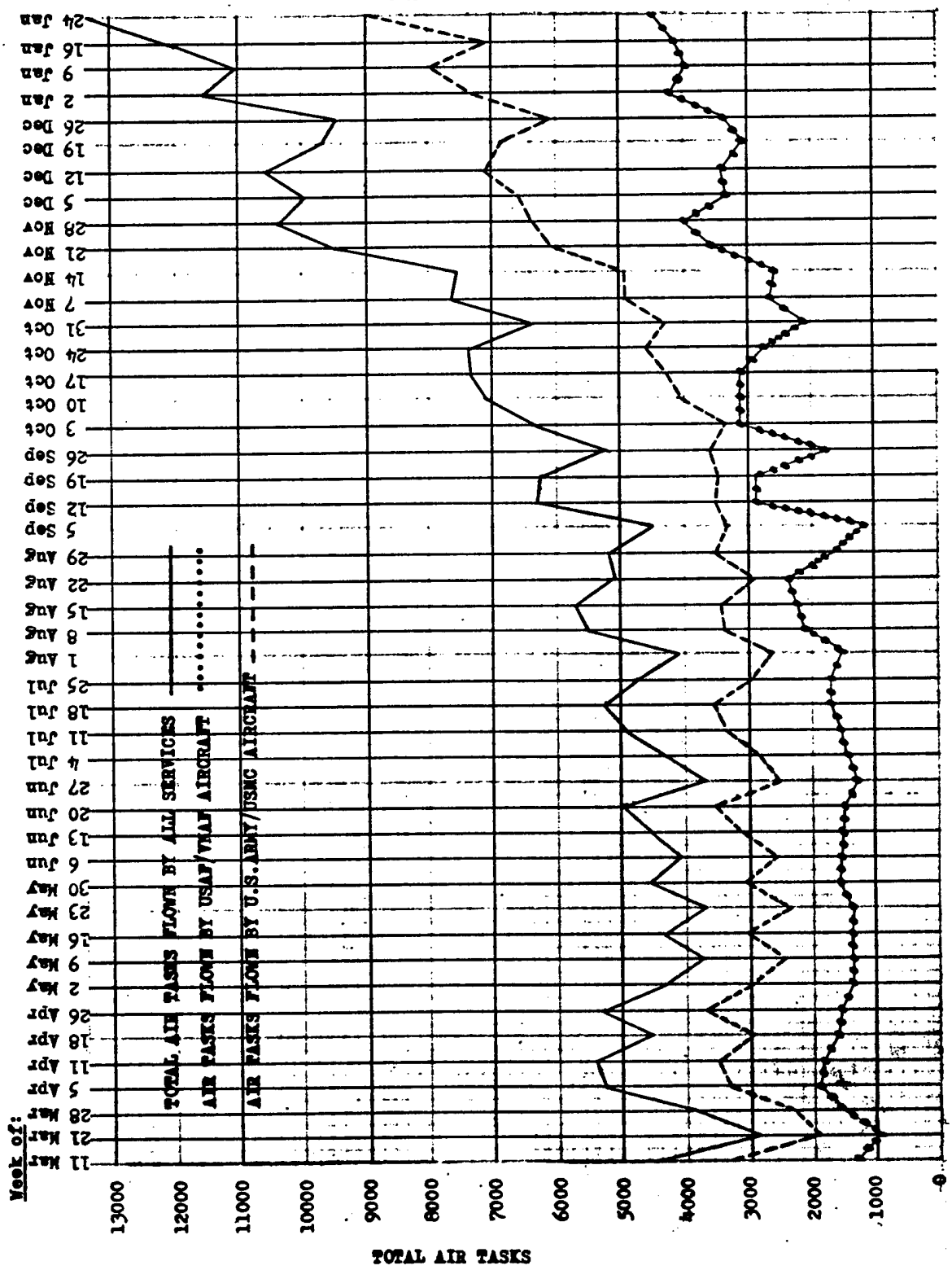

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Chart 7

A COMPARISON OF FLARE DROP TASKS

Purpose: To illustrate the comparative participation in flare drop tasks by USAF/VNAF (dotted line), and U. S. Army/Marine Corps (dashed line) aircraft. This chart should be examined with reference to Chart 3 which illustrated total flareship sorties. (This reference should not be a direct comparison as we cannot equate tasks with sorties, however, the overall trends are comparative in nature.)

Apparent trend: Approximately 1 July 1964, U. S. Army aircraft begin to appear frequently in flare drop missions. Several instances are noted where a decrease in USAF/VNAF flareship tasks was compensated for by a corresponding increase in Army flareship tasks (weeks of 14-21 November 1964 and 9-16 January 1965). The overall trend of flare drop activity, particularly for Army aviation, is noticeably upward during the final months of 1964. USAF/VNAF performed a total of 1133 flare drop tasks while the U. S. Army/Marine Corps total was 162.

Factors influencing the trend: Although there was a definite increase in USAF/VNAF flareship activity during 1964 over previous years, there have still been instances reported when flareships were not available when needed due to other commitments. The U. S. Army, recognizing this problem, apparently attempted to solve it by providing airborne illumination from their own sources. There can be little doubt that this recourse had a favorable impact on the success of a number of offensive as well as defensive air support

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operations at night. If, in addition, we consider the amount of unreported flare dropping conducted by TO-1 aircraft under divisional control, the Army aviation emphasis on illumination and night air operations should be considerably greater than indicated in the MACV MILREP statistics.

Another factor which may well have influenced the Army's increased flare drop activity is the comparative lack of helicopter mission degradation caused by weather conditions. When weather prevents C-47 or C-123 flareships from operating at low levels, a helicopter may still be capable of performing its mission with relative safety and effectiveness.

Conclusions: There has been a rapid increase in emphasis by U. S. Army aviation on the employment of aerial illumination. This is the major conclusion which we may draw from the statistics in Chart 7. This emphasis is a cause, and a result, of the overall increase in air activity in Vietnam during the hours of darkness, and is one of the major changes in emphasis which indicate an evolving doctrine for counterinsurgency.

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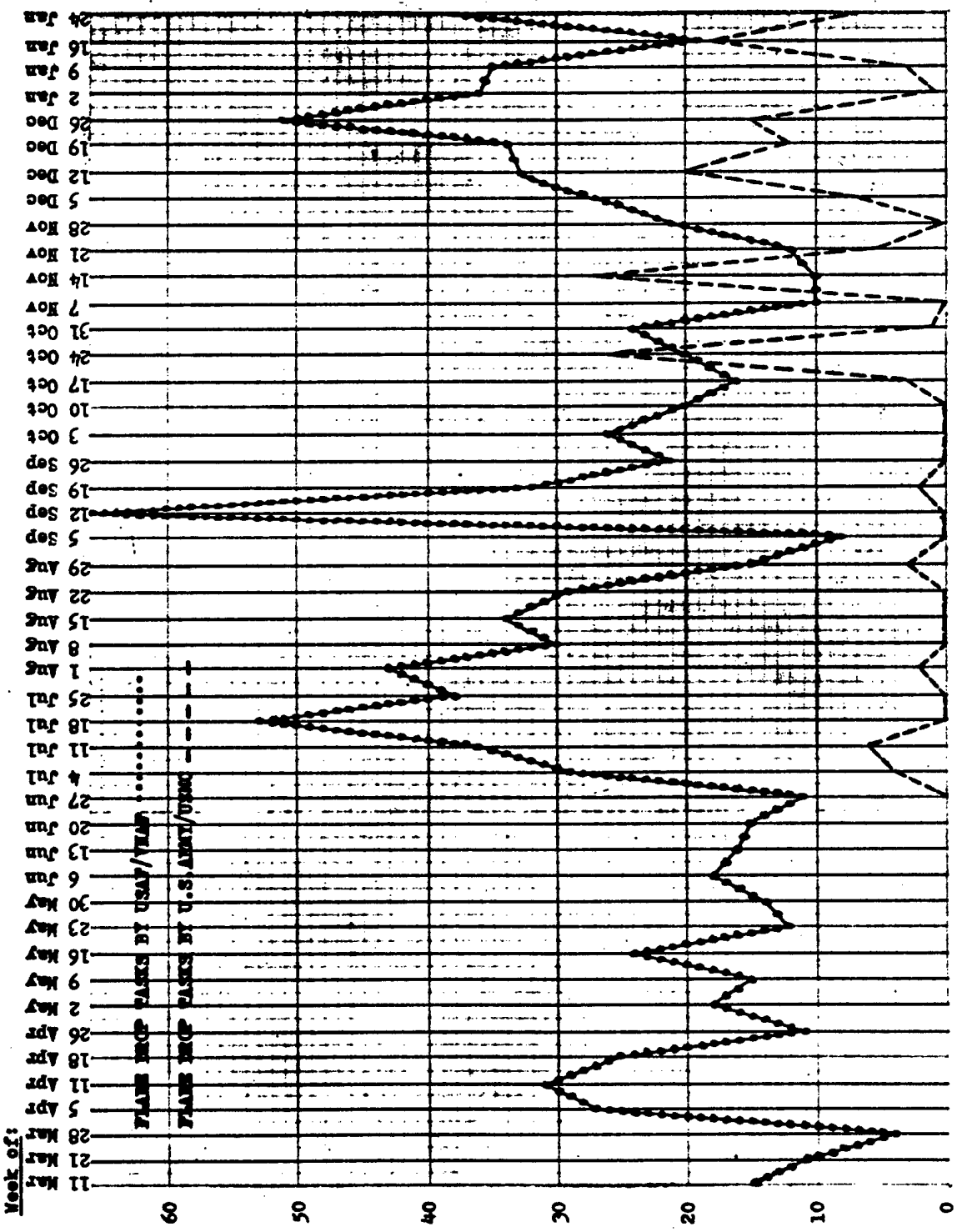
CHART 7



A COMPARISON OF FLARE DROP TASKS

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An overall examination and analysis of the foregoing charted data and conclusions drawn therefrom leads directly to a final conclusion, i.e., the statistical history of night air operations in Vietnam during 1964 points unerringly toward an evolving doctrine for counterinsurgency which makes full use of all facets and capabilities of air power during the hours of darkness. The trends are unmistakable. It remains only for future counterinsurgent forces to exploit the experience gained in night operations on the ground and in the air over Vietnam and to accept, as doctrine, the use of the night.

CHAPTER IV

HARDWARE, HIGHLIGHTS, AND HAZARDS

A discussion of operational factors which influence a military action and which also indicate an evolving military doctrine would not be complete without consideration of specific equipment, tactics, and techniques which make that operation feasible and militarily productive. In this case, the operation is conducted at night, in the air, in a counterinsurgency environment, and as such, presents especial problems in the realms of hardware and tactical action. The past and present extent of night air operations in Vietnam has been covered in detail, and certain conclusions have been made regarding feasibility and productivity. It now remains to cover, in general terms, airborne and related ground equipment utilized in Vietnam to support these operations. Evolution of tactics and techniques for employment of aircraft at night will also be discussed along with those tactics which have been used with success in other counterinsurgency wars and which contributed to development of our current tactics. Finally, consideration will be given to reduced vulnerability of aircraft to ground fire when operating at night.

Tools of the Trade for Nighttime Counterinsurgency

Development and expansion of night air activity in Vietnam has been primarily in the field of operations and tactics. Development of military hardware to support this increased activity has progressed at a comparatively slower rate. The majority of aircraft which contributed and still contribute to steadily improving effectiveness of night air operations have been conventionally powered and, relatively speaking, obsolete or obsolescent. Much of the support equipment for air operations has been in the same category. The predominant use of conventional aircraft and unsophisticated ground support equipment was dictated by a number of practical considerations. To cite a few: legally, the Geneva Accords of 1954 prohibited introduction of jet aircraft into Vietnam; pragmatically, there were few targets during 1962 and 1963 which warranted the tremendous firepower of modern and costly jet fighter-bombers (suitable targets, in the form of larger concentrations of Viet Cong, began to develop during 1964); and logistically, short runways and inadequate facilities to support jet operations, plus the relatively high cost of supplying and maintaining jet fighter-bomber units mitigated against their deployment and employment during the initial air forces buildup.[1]

The scope of this thesis does not permit a deeper probe into economic or political aspects and implications of air power as it is being used in Vietnam during these first few months of 1965. However, militarily, continued and significant increases in night air operations

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[1]In 1962, Tan Son Nhut airport, in Saigon, had the only runway in South Vietnam of sufficient length to handle jet aircraft and the only facilities capable of their support. During 1963 and 1964, airfields at Bien Hoa and DaNang were lengthened to permit jet operations and facilities were constructed to provide for jet maintenance and support.

and employment of more sophisticated aircraft and weapons may become necessary due to enemy antiaircraft capabilities and possible interjection of an enemy threat to our complete air superiority. We may then find that the advantages of night air operations become more profound and realize even greater results. Employment of air power at night must be given its proper emphasis without regard to the level of military conflict.

The first tool in the trade of night air operations for counterinsurgency is obviously the aircraft. Each aircraft listed in Table 1 (p. 50) is technically capable of flying at night, expending ordnance at night, and/or dispensing illumination devices. Practical considerations, however, have dictated that combat night air support missions be conducted by a limited number of these aircraft. If we list, chronologically, aircraft used extensively for night air support in Vietnam during the January 1962 through January 1965 time period, their employment occurred in the following order and on the following types of combat missions:

Type Aircraft	Type Mission
T-28 (VNAF)	Night air defense
SC-47 (USAF)	Flare drop and psywar broadcast
B-26 (USAF)	Night close air support
T-28 (USAF)	Night close air support
RB-26 (USAF)	Night visual and photo reconnaissance
C-47 (VNAF)	Flare drop
OV-1 (USA)	Night visual, photo, and armed reconnaissance
A-1E (USN)	Night air defense

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Type Aircraft (Cont.)	Type Mission (Cont.)
A-1H (VNAF)	Night armed reconnaissance and close air support
T-28 (VNAF)	Night close air support
TO-1D (VNAF & USA)	Night visual reconnaissance, fighter direction (FAC), and flare drop
C-123 (USAF)	Flare drop
A-1E (USAF)	Night close air support
UH-1B/D (USA)	Night armed reconnaissance, flare drop, and suppressive fire
FC-47 (USAF)	Flare drop and night close air support

Although only one type of helicopter is mentioned in this listing (UH-1B/D), it is important to recognize that H-21 (USA) and H-34 (VNAF and USMC) helicopters also played a significant role in night reconnaissance, medical evacuation, and combat support liaison. In addition, light fixed wing aircraft of the Army and Air Force flew countless sorties at night in support of the overall military effort. During this same period there were a number of night photo missions flown by RF-101 reconnaissance aircraft staged initially in Bangkok and then in Saigon. USAF F-102 aircraft were also active in night air defense missions staging from Tan Son Nhut airport in Saigon.

Significant changes in numbers and types of aircraft employed on night missions in Vietnam have occurred primarily during 1964. The workhorse B-26, after several months of increasing non-combat losses, was retired in the latter part of March 1964.[2] The equally rugged but lightly armed T-28 was phased out of the USAF combat inventory the first

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[2]Aircraft Losses Operations Analysis Working Group, "Minimizing Aircraft Damage and Losses from Enemy Ground Fire" (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, 30 Jul 64), p. B-2-3.

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week in July, although the VNAF retained a limited number for reconnaissance and for instrument and proficiency training.[3] Capability to perform night air operations was not reduced by these actions however, due to the rapidly increasing inventory of A-1H's and A-1E's brought into the country during the early spring and summer months of 1964.

> THE VNAF 518TH FIGHTER SQ, WHICH WAS ORGANIZED ON 10 MARCH, FLEW ITS FIRST COMBAT MISSIONS ON 18 MAR 1964. THE VNAF NOW HAS TWO SQUADRONS OF A-1H'S, BOTH STATIONED AT BIEN HOA. THE 514TH POSSESSES 17 AIRCRAFT, AND THE 518TH, SEVEN. EVENTUALLY EACH SQ WILL HAVE 20 A-1H AIRCRAFT.[4]

The MACV MILREP for the week of 25 April 1964 noted some additional changes which were taking place in aircraft status during this period:

> THE FIGHTER STRENGTH OF THE 1ST AIR COMMANDO SQUADRON HAS BEEN INCREASED TO 19 T-28'S. THIS HAS ENABLED IT TO FULFILL THE ESCORT REQUIREMENTS AND ALSO TO FLY A GREATER PROPORTION OF NIGHT CLOSE AIR SUPPORT TASKS. THE NIGHT COMBAT CAPABILITY HAS BEEN ENHANCED WITH TWO EA-1F AIRCRAFT (TWO SEAT A-1H'S EQUIPPED WITH RADAR AND FOUR 20MM CANNON) OPERATING IN AN AIR DEFENSE ROLE UNDER THE TACTICAL AIR CONTROL SYSTEM.[5]

During July 1964, Army helicopters began to play a greater part in night air operations. The MILREP for the week of 11 July stated that,

> ARMED HELICOPTERS CONTRIBUTED GREATLY TO THE AVIATION EFFORT IN III AND IV CORPS TACTICAL ZONES, AND SUPPORTING SPECIAL FORCES

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[3]U. S. Military Assistance Command, Vietnam, "Military Reports," Published Weekly, 11 Mar 64 through 31 Jan 65 (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, Week of 27 Jun 64), p. 3.

[4]Ibid., MILREP Week of 11 Mar 64, p. 25.

[5]Ibid., MILREP Week of 25 Apr 64, p. 16. (The temporary increase in T-28 inventory was brought about by transfer of VNAF T-28's to the 1st Commando unit as VNAF received A-1H replacements. The EA-1F referred to in this report is now commonly known as the A-1E.)

OUTPOSTS DURING THE HOURS OF DARKNESS. . . . THE US ARMY HELICOPTERS DID A COMMENDABLE JOB OF MEDICAL EVACUATION DURING HOURS OF DARKNESS ON 14-15 JULY.[6]

In September their night capability was further exploited in air cover missions:

TWO AIRCRAFT (A-1E) HAD BEEN SHOT DOWN BY GROUND FIRE IN KIEN GIANG PROVINCE, BETWEEN 230030H AND 230100H SEP. ARMED HELICOPTERS OF THE DELTA BATTALION AND AMBULANCE HELICOPTERS OF THE 57TH MEDICAL DET WERE SCRAMBLED AT 230105H SEP AND PROVIDED CONTINUOUS COVER AT THE CRASH SITE UNTIL DAYLIGHT.[7]

A final example of employment of UH-1B helicopters in night operations was contained in the MILREP for the week of 12 December 1964.

AT 140100H, FIVE ARMED AND ONE CONTROL UH-1B HELICOPTER RESPONDED TO AN OUTPOST UNDER HEAVY VC ATTACK IN THE 9TH DIV AREA. FLARES WERE DROPPED FROM THE CONTROL HELICOPTER TO ASSIST IN DIRECTING ARTILLERY AND SUPPRESSIVE FIRES. THE QUICK RESPONSE OF THE HELICOPTERS ENABLED THE OUTPOST TO REPULSE THE VC ATTACK. ARMED HELICOPTERS ALSO PERFORMED ESCORT MISSIONS FOR ARVN TROOP CARRIERS REINFORCING THE OUTPOST BETWEEN 0330H AND 0500H.[8]

It is perhaps fitting that the aircraft which has performed one of the most important night missions (flaredrop) and the greatest number of night missions is the venerable C-47. In its many configurations, the twenty-five year old "Gooney Bird" continues to be called upon to perform tasks which its designers must shudder to contemplate. Aside from its normal use as a transport, psychological warfare broadcast missions, flaredrop and leaflet drops are common missions for this reliable machine. The ultimate in utilization of the C-47 was realized

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[6] Ibid., MILREP Week of 11 Jul 64, pp. 3 and 9.

[7] Ibid., MILREP Week of 20 Sep 64, p. 14.

[8] Ibid., MILREP Week of 12 Dec 64, pp. 14-15.

during the week of 12 December 1964 when, with a new designation (FC-47), and a few "minor" modifications (in the form of SUU 11/A gun pods),[9] this aircraft was first used as a fighter-bomber.

> ONE FC-47 WAS EMPLOYED FOR THE FIRST TIME. ON 171440H DEC, THE FC-47 FURNISHED CLOSE AIR SUPPORT FOR AN OUTPOST THAT WAS UNDER ATTACK BY STRAFING VC PERSONNEL AND STRUCTURES WITH MORE THAN 14,000 ROUNDS OF 7.62MM AMMUNITION. . . . SUBSEQUENTLY, THIS AIRCRAFT FLEW THREE INTERDICTION SORTIES.[10]

The following week, additional FC-47 activity was reported.

> FLARESHIP ACTIVITY INCREASED SLIGHTLY WITH FC-47 AIRCRAFT BEING UTILIZED FOR BOTH FLARE DROPS AND CLOSE AIR SUPPORT FOR THREE OUTPOSTS UNDER VC ATTACK. GROUND REPORTS FROM TWO OUTPOSTS INDICATE THAT VC BROKE CONTACT AFTER ACTION OF FC-47 WHILE THE VC CONTINUED THEIR ATTACK ON THE THIRD OUTPOST.[11]

The modification and unique employment of the FC-47 is undoubtedly due to the need for an immediate strike capability in support of outposts and hamlets under attack. Throughout the three year period under consideration, flareship response progressively improved; from a posture of ground alert during 1962, to the all-night airborne alert and cover of 1964.[12] However, the related and increasingly necessary fighter support has not had this capability due, primarily, to endurance. There have been repeated instances (particularly since the VC have become stronger and bolder) when flareships have arrived over a beleagured outpost and flares alone have not been an adequate deterrent to continuation of the VC attack. The VC were quick to recognize the usual delay between flares and arrival of firepower, and at times

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[9] Ibid., MILREP Week of 12 Dec 64, p. 2.

[10] Ibid., p. 11.

[11] Ibid., MILREP Week of 19 Dec 64, p. 11.

[12] Ibid., MILREP Week of 26 Dec 64, p. 19.

seemed to use flares to their advantage in the attack. It must have been with great consternation and surprise that the Viet Cong experienced their first counterattack by the heretofore harmless flareship. Immediate response capability provided by an aircraft that can drop an almost unlimited number of flares and then follow up those drops with ordnance delivery is a major contribution to night air support in Vietnam. The VC can never again be certain that flares are not a prelude to immediate attack from the air.

While the major contribution to night air operations in Vietnam has been by Army, Air Force, and Marine Corps aircraft, the U. S. Navy also provided limited numbers of aircraft for this purpose. As previously mentioned, the AD-5's (A-1E) were employed in 1962 and 1963 in a night air defense role. Additional Navy participation was indicated late in 1964. At 2305 on 15 December, the radar cite at Da Nang reported high speed boats operating in the area. A VNAF C-47 dropped forty-three flares escorted by two A-1H's. At 2355, Navy aircraft from Seventh Fleet aircraft carriers arrived in the area. They performed illumination and search operations but found only some fishing boats.[13] If the general military activity in Vietnam continues to escalate during 1965, it is anticipated that naval air participation by Seventh Fleet aircraft may increase significantly.

The second tool of importance to night air operations is the variety of illumination devices used by ground and air forces in Vietnam.

As indicated in Chapter III, the primary means of providing battlefield illumination to counterinsurgent forces in South Vietnam has been the aircraft dropped parachute flare. From 11 March 1964 through

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[13] Ibid., MILREP Week of 12 Dec 64, p. 16.

31 January 1965, 55,715 parachute flares were dropped from C-47 and C-123 aircraft. This figure does not include an undetermined number dropped from Army TO-1D, OV-1, and helicopter aircraft during this same period. Although several different model parachute flares have been employed,[14] the Mark 24 is becoming the standard item in Vietnam and is currently the flare being used by Tactical Air Command in its night fighter-bomber training program. This flare may be dispensed by hand from flareships or from special flare racks carried on bomb stations under the wings of fighter aircraft.

Other devices have been used effectively under circumstances requiring immediate illumination. Major Gorvad, in his questionnaire, alluded to the required use of mortar fired illuminating rounds when air dropped flares were not immediately available.[15] Major Pulsipher also mentioned use of artillery flares on ten occasions and 60mm mortar illuminating rounds and hand held flares on others.[16] The MACV MILREPS contain numerous references throughout 1964 to use of ground fired illumination. The universal complaint, however, is the sacrifice of firepower inherent in using artillery or mortars for illumination missions. In consideration of the relatively short burning times of mortar and artillery illuminating shells and consequently the large

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[14]The three models of flares used in Vietnam are the Mark 6, the Mark 24, and the M25A1. The first of these has been the most widely used, and although not as brilliant as the Mark 24 (1,000,000 candlepower versus 2,500,000), its longer burning time (3 minutes versus 2) has been a significant advantage.

[15]Questionnaire, Maj. Peter L. Gorvad, Inf., USA, USACGSC Student, 19 Nov 64.

[16]Questionnaire, Maj. Elwin D. Pulsipher, Inf., USA, USACGSC Student, 19 Nov 64.

number of rounds which must be fired to maintain continuous illumination, the logistics problem becomes significant also. We may conclude that in a counterinsurgency environment, with its attendant scattering of forces, the air dropped flare will continue to be the most effective overall illuminating device. We must also conclude, however, that each unit from battalion down to squad and each village or outpost should have a limited organic capability to provide its own illumination until a flareship can assume the mission. This conclusion is supported by MACV in lessons learned from the VC attack on Nam Dong Special Forces Camp on 6 July 1964.

> THE CAMP MUST PRACTICE ILLUMINATING THE SURROUNDING AREA EITHER BY ELECTRIC LIGHTS OR ARTIFICIAL ILLUMINATION AT IRREGULAR INTERVALS DURING HOURS OF DARKNESS. BURNING BUILDINGS, NEAR POSSIBLE AVENUES OF APPROACH DURING AN ATTACK, IGNITED BY PREPLACED CHARGES OR ELECTRICALLY DETONATED CAN PROVIDE EXCELLENT ILLUMINATION.[17]

"It seems apparent that battlefield illumination has tremendous tactical possibilities which have not been exploited."[18]

The third tool which plays a vital part in night air operations concerns communications equipment. In 1962 and 1963, the most significant ground support problem affecting night air operations in Vietnam was the lack of compatible radios. Again, this is a subject worthy of exhaustive analysis but beyond the scope of this paper. In brief, the problems began in the initial stages of development of the hamlet warning system. The most common radio in use was the AN/PRC-10 --a relatively small, often unreliable, and short ranged means of

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[17]U. S. Military Assistance Command, Vietnam, op. cit., MILREP Week of 4 Jul 64, pp. 27-28.

[18]H. Richard Blackwell, "Battlefield Illumination by Visible Light," Project MICHIGAN (Ann Arbor, Michigan: Univeristy of Michigan, 25 Jan 55), p. 123.

communication. Special antennae had to be designed and built to insure minimum satisfactory operation between villages and sector headquarters.[19] These radios also presented problems when used in Forward Air Control (FAC) aircraft due to their sensitivity to vibration. A conservative estimate of airborne radio failure on combat missions during 1962 would be 25 per cent.

The language barrier in concert with general unreliability of airborne radio equipment made successful completion of a Vietnamese directed interdiction or close air support mission more a matter of luck than of skill. The Director of Army Aviation in Vietnam during 1962, in reporting on operations in general, made repeated references to the problem of unreliable and incompatible radios and their effect on air operations.[20] A Rand Ad Hoc Group studying the problems of counterinsurgency and air power concluded that there was a definite need for "coded target indicating devices for use (instead of voice communications) between Forward Air Controllers on the ground and strike aircraft to get around language barriers and other problems."[21]

A project to install the reliable AN/ARC-44 radio in all aircraft was initiated during the summer of 1962. However, it took almost

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[19]U. S. Army MAAG, II VN Corps Detachment, Pleiku, Vietnam, "Village Early Warning System, Memorandum" (Pleiku, Vietnam: U. S. Army MAAG, II VN Corps Detachment, 2 Oct 62), p. 2.

[20]Director of Army Aviation, "U. S. Army Aviation Operations in South Vietnam" (Washington, D. C.: Office of the Deputy Chief of Staff for Military Operations, Department of the Army, 1 Oct 62), pp. 18-19.

[21]H. Speier et al, Counter-Insurgency and Air Power: Report of a Rand Ad Hoc Group, Memorandum RM-3203-PR (Santa Monica, California: The Rand Corporation, Jun 62), p. 36.

two years before these radios were in general use. The first comprehensive report on this project appeared in the MACV MILREP for the week of 2 May 1964 and indicated that the majority of aircraft then in Vietnam were now equipped with the new radio and that aircraft scheduled for assignment to Vietnam would have the AN/ARC-44 radio installed prior to arrival.[22]

Navigational aid equipment presented still other problems for night air operations in Vietnam. There has been a dearth of aids to navigation in Vietnam from the beginning, due, in part, to the fact that very little if any night flying was conducted prior to arrival of United States air units. With the advent of increasing air activity, and particularly night air activity, the need for new and modern "NAVAID" equipment became critical. The three radar sites at Saigon, Pleiku, and Da Nang provide primary navigational assistance, and the remainder is provided by a few Low Frequency Range stations and a limited number of Visual Omni Radios (VOR). Ground Controlled Approach (GCA) and Tactical Air Navigation (TACAN) facilities have been installed at most major airfields only during the past twelve months. The GCA and TACAN facilities were installed at Bien Hoa on 15 August 1964.[23] It is assumed that this equipment was required as significant numbers of jet aircraft were deployed to Vietnam; aircraft which, in most cases, are equipped only with TACAN. It is important to realize that not only in Vietnam but in many of the underdeveloped countries of the world in which we may be called upon to fight a counterinsurgency war, navigational aids may be extremely austere or non-existent. Effective

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[22] U. S. Military Assistance Command, Vietnam, op. cit., MILREP Week of 2 May 64, pp. 6-7.

[23] Ibid., MILREP Week of 8 Aug 64, p. 51.

counterinsurgency night air operations of both defensive and offensive nature require means whereby a pilot can accurately locate his target. The "flaming arrow" is an effective aid in locating a defensive target after a general vector has been provided by ground radar, but offensive operations require much more accurate navigation. One method will be discussed later in this chapter.

Aircraft, illumination, and electronic devices have been basic tools of the trade for night air operations in Vietnam. While these tools have been used with relative effectiveness, recent technological developments in all of these fields, plus recognition and exploitation of tactics, techniques, and equipment used in other wars, point to many additional ways in which the airplane, illumination devices, surveillance devices, and communications equipment may be used to advantage for night air operations in the future.

Tests and Experiments

Growing recognition of night as the battlefield environment for counterinsurgency operations has brought about several equipment tests in Vietnam, oriented on improving night air operations. One of these was a test of feasibility of Tactical Area Positioning System (TAPS) equipment for use in counterinsurgency. The TAPS, originally known as the Decca Navigation System, was tested in B-26, C-123, and H-21 aircraft from 20 December 1962 to 20 July 1963.[24] Its purpose was to provide pilots with a graphic presentation of their exact position over the ground. Implications for night operations are obvious,

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[24]U. S. Air Force 2d Air Division Final Report, "Operational Test and Evaluation of the Tactical Area Positioning System in the Republic of Vietnam," PACAF Test Directive No. 63-1 (Saigon, Vietnam: U. S. Air Force 2d Air Division, 20 Aug 63), p. ii.

however, navigational accuracies of plus or minus 10 meters at distances of 40 nautical miles, and plus or minus 600 meters at 240 nautical miles were attainable, with necessary reliability, only during daylight hours.[25] "Night effect" on propogation of low frequency radio waves rendered the equipment unreliable at night.[26]

The Combat Development and Test Center in Vietnam experimented with a chemiluminescent compound called TIARA (Target Illumination and Rescue Aid) which emits a strong glow when exposed to air. Although the test was primarily to examine uses of TIARA devices for marking rifle sights and for hand grenade or rifle grenade spotting rounds, evaluators were more enthusiastic about possibilities of using the grenade "as a reference point to direct fire,. . . and as a target guide for support aircraft."[27] Several strategically located TIARA grenades or artillery shells detonated on the perimeter of an outpost or village could provide target identification necessary to permit strike aircraft to expend ordnance on enemy forces outside the post perimeter when flare illumination was not immediately available.

Additional experiments have been and are being conducted in Vietnam in the field of infrared photography and passive and active infrared surveillance devices with encouraging results.[28]

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[25]U. S. Army Concept Team in Vietnam Final Report, "Evaluation of Tactical Area Positioning System (TAPS) in Army Helicopters" (Saigon, Vietnam: U. S. Army Concept Team in Vietnam, Nov 63), p. 9.

[26]U. S. Air Force 2d Air Division Final Report, op. cit., p. 6.

[27]Combat Development and Test Center, Republic of Vietnam Armed Forces, "Operational Test of TIARA Items," A Report of CDTC-V Task Number 71D (Saigon, Vietnam: Combat Development and Test Center, Vietnam, 19 Apr 63), p. 4.

[28]U. S. Military Assistance Command, Vietnam, op. cit., MILREP Week of 16 May 64, p. 16.

While recent tests and experiments in Vietnam are worthy of note, even more interesting are tests, experiments and "brainstorm" ideas in the field of illumination and night operations which have been conducted or proposed in other countries, in other times, and which appear to have a current application for night air warfare in a counter-insurgency environment. A cursory examination of these ideas, and their application for counterinsurgency operations, particularly in a jungle environment, may help to focus on the recent increase in interest and emphasis on night operations in general, and more specifically on night air operations.

The ideas include a Rand Ad Hoc Group suggestion that we use "captive balloons, possibly coated by a substance making them readily detectible by radar, to provide ground troops operating in small patrols with a much needed light-weight target marking device. Other possibilities include tree-top marking by dyes, infra-red reflecting or fluorescent substances, and panel devices."[29] Also mentioned was a device which could be fired into the air above tree cover to spread a thin alluminum powder over the tree tops for radar spotting.[30]

In the realm of identification and signaling, the Signal Advisor to the 23d Tactical Area in Vietnam voiced a need for "development and supply of a parachute flare which will reach 300 meters elevation, burn in any kind of weather for at least 3 minutes and come in a variety of colors."[31]

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[29] H. Speier et al, op. cit., p. 36.

[30] Ibid., p. 104.

[31] U. S. Army MAAG, II VN Corps Detachment, Pleiku, Vietnam, op. cit., p. 3.

In late 1962, the U. S. Marine Corps suggested using chemiluminescent compounds in the form of powders or sprays for target marking. They also considered use of LASER light beams to inflict burns or blindness on an enemy.[32] The Rand Ad Hoc Group also discussed use of high intensity light to blind or burn guerrillas to facilitate later identification and separation from the friendly populace.[33]

A study of battlefield illumination by visible light, conducted by the University of Michigan in 1955, suggested use of an experimental light source "for continuous illumination of the battlefield from an aerial mounting platform located over friendly lines. It might be possible to mount the portable light source on a platform supported by a captive balloon, or on a platform supported by a portable tower."[34] The same study mentioned "the use of an aerial 'spotlight' [which] seems to offer considerable promise for increasing target detectability."[35]

More recently, Lockheed Aviation made a study of battlefield illumination by nuclear light which also suggests a balloon supported light.

> Even though the surface brightness is low, an incandescent nuclear light source internally powered by radioactive decay does have impressive simplicity, dependability and above all lightness. Such sources may provide 5,000 to 20,000 candles per ounce of unshielded source weight and could conceivably have wide use as balloon-supported

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[32]Marine Corps Landing Force Development Center, "Concept of Close Combat During Night Operations and Other Conditions of Low Visibility," Report of Project No. 30-61-10, Conducted by Tactics and Techniques Board (Quantico, Virginia: Marine Corps Landing Force Development Center, 31 Dec 62), p. 8.

[33]H. Speier et al, op. cit., p. 158.

[34]H. Richard Blackwell, op. cit., p. 105.

[35]Ibid., p. 79.

signals or floodlights. In comparison, a 100 watt tungsten light bulb supplies approximately 150 candle power of light.[36]

The U. S. Army Command and General Staff College, in a 1960 study of battlefield illumination, suggested using lights in helicopters and hovering drones to illuminate required areas. Also mentioned was employment of "aircraft rocket flares which can be projected ahead for immediate exploitation without aircraft having to retrace flight pattern. . ."[37] The Canadian Army, in commenting on such a rocket flare, had this to say: "It is felt that dispersal of the enemy and use of electronic surveillance and target acquisition devices on the future battlefield may make pinpoint or local illumination a greater requirement than area illumination."[38]

The Air Force Air Proving Ground proposed using an airborne searchlight on fighter-bombers for illuminating point targets after an aiming point was established.[39] Also mentioned was the M-91 Target Identification Bomb (red) which was color visible at night up to

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[36]Missile Systems Division of Lockheed Aircraft Corporation Final Report, "Battlefield Illumination Study, Nuclear Light" (Arlington Hall Station, Virginia: Reproduced by the Armed Services Technical Information Agency, n.d.), p. 41.

[37]U. S. Army Command and General Staff College, "Battlefield Illumination Study," Informal Study: Operational Doctrine for Employment of Battlefield Illumination during the period 1960-1970 (Fort Leavenworth, Kansas: U. S. Army Command and General Staff College, 10 Feb 60), p. D-31.

[38]Headquarters, U. S. CONARC Letter ATDEV-3 400.114 (C), "USCONARC-Approved Military Characteristics for Rocket System, Illuminating, Battlefield"(U), (Ft. Monroe, Virginia, 8 Sep 60), p. 6.

[39]Air Proving Ground Command, "Final Report on Fighter-Bomber Tactics and Techniques for Night Tactical Air Attack," Project No. APG/TAT/22-A-8 (Eglin, Air Force Base, Florida: Air Proving Ground Command, 1 Jul 54), p. 33.

approximately forty-five statute miles and was considered the most satisfactory target marking device used in this particular test project (1954).[40]

The U. S. Army, in a 1962 test of armed helicopter capability to deliver fires at night, concluded that "of the illumination methods (artillery, mortar, aircraft flares, and ground and air vehicle mounted searchlights) employed, the air vehicle mounted searchlight proved to be most effective."[41]

One additional device which appears to have important implications and application for night aerial warfare is the "Scotoscope" or "Starlight" scope. Mentioned briefly in the January 1965 Military Review (p. 104) and discussed in detail in a 1963 Sarnoff Research Center study, this image intensification device, which uses the natural light of the stars or other low intensity light sources, is a significant "break through" in the field of battlefield surveillance.

> Insofar as land warfare is concerned, no technical development in progress at present that we are aware of has the potential of changing the nature of future warfare so profoundly as does the scotoscope.[42]

There are limitations on use of this device for high performance aircraft; however, in a counterinsurgency environment, using relatively low performance aircraft, the scotoscope has numerous applications.

> The capability to operate, observe and use their weapons that scotoscopes give to the low flying, relatively slow V/STOL air vehicles organic to ground combat forces does not extend to

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[40] Ibid., p. 149.

[41] Headquarters, U. S. Army Armor School Letter AIBK-SKE, "Battlefield Illumination for the Delivery of Fire by Armed Helicopters," (Fort Knox, Kentucky, 16 Jun 62), p. 2.

[42] D. S. Bond and F. P. Henderson, "The Conquest of Darkness," A Study of Scotoscopes and Their Impact on Warfare (Princeton, New Jersey: Advanced Military Systems Radio Corporation of America, David Sarnoff Research Center, Jul 63), p. 4.

> conventional high performance tactical aircraft used in support of ground forces. The present range of scotoscopes is inadequate for the normal operating speeds and altitudes of these aircraft. However, scotoscopes may be of considerable assistance to them in take-off, landing and taxi operations when operating from forward landing fields under blackout conditions.[43]

With the anticipated development of a "pure" counterinsurgency aircraft with V/STOL sharacteristics, the scotoscope may well change the entire concept of night air operations in a counterinsurgency environment.

We have mentioned just a few of an almost endless list of unique, sometimes practical, and sometimes impractical, devices which, in the future, may be seen on night battlefields in both conventional and unconventional warfare. Perhaps the most impressive and intriguing by-product of warfare of any kind is the improvement and development of military equipment, born of need, which the ingenuity of man will foster.

Tactics and Techniques

Although resourcefulness of military man is readily apparent in development of innovations in military hardware, in the field of tactics and techniques this adroitness is even more evident. Every soldier and airman, regardless of rank, is a would be tactician. Suggestions, recommendations, and proposals in the field of tactics will never be in short supply. Vietnam has been a particularly fertile ground for development of new tactics and techniques.

The majority of tactics and techniques used in Vietnam for employment of air power at night were not especially new innovations or inspirations of military genius; rather, they were tactics or modifications of tactics used in World War II, in Korea, or in counterinsurgency operations conducted during the past fifteen years. That

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[43] Ibid., p. 54.

we did not immediately employ the latest tactics upon entry into Vietnam is understandable. There was the inevitable relearning process which accompanies most military operations conducted after a period of peace. A Joint Air-Ground Operations Conference conducted in Korea, immediately following the Armistice in 1953, observed that "many of the lessons learned in World War II had to be relearned in Korea. On the other hand, many of the procedures, tactics and techniques practiced in Korea may not have application in future operations."[44] This relearning of tactics and techniques has been characteristic of our effort in Vietnam, and we have eliminated and innovated to meet requirements of that particular environment.

To provide a comparison of night air tactics in the Vietnam of early 1965 and night air tactics from other wars, we first list the most commonly used tactics as they developed in Vietnam. This will be followed by a general discussion of tactics and techniques used during similar or related operations in previous armed conflict.

The initial "tactic" for use of flare aircraft was ground alert status; aircraft "scrambled" when a request was forwarded through the air request net.

This tactic naturally evolved into airborne alert status with resultant decrease in reaction time. Additional aircraft were maintained on ground alert for backup purposes.

All-night air cover was the next step and involved relays of flareships replacing the airborne alert to provide continuous response capability throughout the hours of darkness.

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[44]Col. William J. Yates, USAF, "Report on Joing Air-Ground Operations Conference" (Seoul, Korea: Headquarters, Fifth Air Force, 8-22 Aug 53), p. 23.

The next step was combined flareship-strike aircraft airborne alert. Fighter-bomber and flareship "teams" provided a minimum-response-time illumination and firepower capability.

The final flareship tactic involved arming the airplane to provide an integrated flare-strike capability in one aircraft.

During this evolutionary period, the tactical missions of flareships included adjustment of artillery fire as well as coordination and control of strike aircraft fires.

Strike aircraft tactics developed in much the same manner. Initially aircraft stood ground alert and "scrambled" only on specific request.

This tactic was followed by air alert (combat air patrol) particularly in the III and IV Corps Tactical Zones where night activity has been most intense. In both cases, strikes were conducted under illumination provided by flareships.

A refinement of this tactic was the coordinated attack using artillery illumination in conjunction with artillery fires and fighter-bomber strikes.

A three-way operation followed, with artillery, flareship, and fighter-bomber colaborating in mutually supported strikes or defensive operations.

During this period, strike aircraft were occasionally employed in support of outposts under attack, without benefit of flareship illumination. These strikes were normally made only on those villages or posts equipped with the "flaming arrow." In some instances, when the "arrow" was not available, outposts used tracer ammunition to show direction to the enemy.[45]

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[45]Aircraft Losses Operations Analysis Working Group, op. cit., p. D-4-2.

One of the more recent tactics (mid-1964) has been the use of armed helicopters in conjunction with flareships, or in a "solo" role dropping their own flares and then expending ordnance. This tactic has been used both offensively and defensively with impressive results.

All of the preceeding tactics (with the possible exception of the armed helicopter operation) have been used previously in unlimited, limited, and/or counterinsurgency warfare. While precise execution of these tactics may have changed to accomodate new aircraft or ordnance capabilities, the basic tactics are unchanging. The major change which can be recognized in employment of air power at night is new emphasis on its use.

Examination of tactics used by participants in night aerial warfare of the past leads to an initial conclusion that success normally involves a cooperative effort on the part of ground and air forces. Col. R. Laure of the French Army, a veteran of both the Algerian and Indo-Chinese conflicts, asserts that "counterguerrilla war is a combined Air-Army problem requiring a lot of imagination and cooperation--in other words, a human problem rather than a technical problem. This is my opinion after spending four years in guerrilla warfare and three others in Southeast Asia, and I think I am an air-minded Army officer."[46]

In July 1963, The Rand Corporation conducted a series of symposiums on use of air power in counterinsurgency and unconventional warfare. Participants in the Malayan Emergency, the Philippine Huk Campaign, the Algerian War, Chindit Operations in Burma, Allied Resistance to the Japanese on Luzon, and Unconventional Warfare in the

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[46] A. H. Peterson, G. C. Reinhardt, and E. E. Conger, "Symposium on the Role of Airpower in Counterinsurgency and Unconventional Warfare: The Algerian War," Memorandum RM-3653-PR (Santa Monica, California: The Rand Corporation, Jul 63), p. 63.

Mediterranean Theatre were brought together to discuss their experiences and to attempt to apply their knowledge to present and future counterinsurgent air operations. Before citing some of the tactics and techniques which these "experts" expound, the author gives recognition to the fact that no two military operations will ever be precisely the same. Internal and external forces, limitations, and technological developments will always be different. Therefore, these experiences are presented only to provide a general background for development of the theses that night air operations are evolving as doctrine for counterinsurgent warfare and that this evolution is rooted in past conflicts as well as in the present Vietnamese war.

In the symposium on the Malayan Emergency, Air Commodore P. E. Warcup, C.B.E. (Royal Air Force) said:

> I think all of us will agree that for offensive air operations to be successful, certain conditions must be fulfilled. . . . these are an identifiable target, its exact geographic location, and an attacking force capable of accurate navigation to the target and carrying a weapon suited to the target.[47]

Unfortunately, most of these conditions are noticeably not an inherent part of the night air environment in Vietnam. Commodore Warcup went on to discuss several methods of satisfying his prerequisites by using level-bomber aircraft.

> Two bombing methods were used. The first, a form of target marking by Army reconnaissance planes with the bombers aiming at the target marker, was not frightfully accurate. Eventually a radar technique was developed that was extremely accurate and was independent of night and weather. With the radar technique, the aircraft would be directed to a point in space and the pilot told when to release his bombs . . . Sometimes we bombed merely to flush CT's out of an area . . . other times we scattered bombs around the place to keep the CT's awake and to make life generally difficult for them.[48]

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[47]A. H. Peterson, G. C. Reinhardt, and E. E. Conger, "Symposium on the Role of Airpower in Counterinsurgency and Unconventional Warfare: The Malayan Emergency," Memorandum RM-3651-PR (Santa Monica, California: The Rand Corporation, Jul 63), p. 48.

[48]Ibid., p. 49.

A tactic mentioned by Air Commodore A. D. J. Garrison, O.B.E. (Royal Australian Air Force) for use of level bombers has implications for night attacks on many areas in Vietnam.

> Bombing was done on a timed run, a given distance and direction from some fixed point that could be clearly identified. There were various means of finding the target. In lieu of a fixed point on the ground that you could pick up visually or by radar, a searchlight put up by the troops or a radio beacon carried by them would suffice; any way to get a pinpoint some distance back from the target. Given that, you could bomb extremely accurately. . . . We also used balloons put up out of the jungle by the ground forces.
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> . . . . . .
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> Operations were conducted 24 hours a day as required.[49]

There are also records of effective results being achieved by B-29 level bombing in close support of ground forces during the Korean War.[50] Since that time there has been little, if any, emphasis placed on the use of the level-bomber in close support of ground forces, particularly in counterinsurgency warfare. A tactic which might well evolve out of the aforementioned procedure is use of air dropped flares to light an Initial Point (IP) for a bombing run. The bomb run itself would then be conducted on the actual target several miles away without illumination. This tactic might catch the VC out from under protection, looking at the deceptive flare burning in the distance. Squadron Leader J. C. Hartley, a Royal Australian Air Force navigator in Malaya, described a technique similar to that just mentioned.

> For night bombing the Army very conveniently set up a brace of searchlights pointing vertically in . . . two positions for us. . . . We have run as much as 20,000 yards from known points, though we tried to keep them down to about 6000. . . . The beauty of this

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[49] Ibid., pp. 60-61.

[50] S. H. Turkel, "Close Air Support, Volume II, Background and Evaluation of Developments and Operations" (Culver City, California: Aerospace Group, Aeronautical Systems Division, Hughes Aircraft Company, Jul 62), p. 84.

type of run, of course, was the fact that you could drop blind. . . . Today this technique would be greatly simplified with the use of Doppler, and would be the easiest thing in the world to do.[51]

Squadron Leader Hartley also cited several "new" reasons for using air dropped flares.

> We did quite a bit of flare-dropping for two reasons: One, to keep the Communists awake, keep them moving, keep them upset; and second, to allow Gurkhas to extricate themselves from untenable positions at night. . . . We have sat there for hours dropping flares to light the area for the Gurkhas to execute what they called a 'planned withdrawal.'[52]

In the Philippines, during World War II, the sound alone of an aircraft was adequate to deter enemy activity. "By keeping a plane over Clark Field and another over the Manila Field area, anybody showing a light would be hopped on, and it kept them in their foxholes."[53] In Vietnam, the sound of aircraft must also cause the VC to restrict their movement to some degree.

Lt. Col. M. W. Sutcliffe (British Army) commented on the psychological aspects of night bombing.

> There was quite a little night bombing with psychological impact. There would be, maybe one aircraft coming over each half hour, perhaps for as long as a week. This certainly had a deterring effect, although in the long term, primarily a psychological effect on morale.[54]

Squadron Leader A. J. Fookes (Royal Australian Air Force) made reference to several additional methods for using night air operations as a psychological weapon.

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[51]A. H. Peterson, G. C. Reinhardt, and E. E. Conger, op. cit., p. 64.

[52]Ibid., p. 65.

[53]Naval Air Intelligence Group (OP-16-V), "Interview of Comdr. Turner F. Caldwell, Jr., USN," C.O. Night Air Group 41, U.S.S. Independence (Washington, D. C.: Division of Naval Intelligence, Office of the Chief of Naval Operations, Navy Department, 23 Mar 45), p. 2.

[54]A. H. Peterson, G. C. Reinhardt, and E. E. Conger, op. cit., p. 69.

> Sometimes when CT's were in a general area, you had a tape with just noise, squeals and bangs. The aircraft flew up and down at night to keep them awake. . . . A point on psychological warfare that hasn't been mentioned before; quite often on a supply drop we would be diverted a few miles to drop some rifle or machine gun simulators, delightful little things, just a string of .30 caliber or .303 rifle cartridges with some means of exploding them. They usually had a delay of five to eight hours. You just threw them indiscriminantly into the jungle. Sometime during the night they started going off. Some of them sounded like machine guns; others would be single shots. This was just to keep the terrorists awake. I believe it would still be a good idea.[55]

There is no record of this tactic being used in Vietnam, however, it would appear to have merit particularly in the more remote and inaccessible areas in which the Viet Cong operate.

The symposium on the Algerian War brought out several additional points of interest relevant to night air operations and their value in counterinsurgency. Col. J. Mitterand, (French Air Force) referred to one incident where "the commander of Touggourt also requested aircraft with flares for night surveillance. The area was light [sic] all night by flares, not to continue the fire action, but to oblige the band to stop and hide in the bushes."[56]

Lt. Gen. Y. P. Ezanno (French Air Force) made several interesting comments on the use of ordnance and ordnance delivery means by air.

> We used, on many occasions, one to three-hour delay fuzing against rebel regroupment areas. We would bomb them before nightfall and hope that the enemy would come in during the night and be blown up. That had a morale effect, anyway.[57]

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[55] Ibid., pp. 69-70.

[56] A. H. Peterson, G. C. Reinhardt, and E. E. Conger, "Symposium on the Role of Airpower in Counterinsurgency and Unconventional Warfare: The Algerian War," Memorandum RM-3653-PR (Santa Monica, California: The Rand Corporation, Jul 63), p. 70. (This action occurred in Oct 59.)

[57] Ibid., p. 41.

This tactic was and is being used in Vietnam, however, it is very difficult to determine specific results. It undoubtedly makes the VC wary of handling unexploded ordnance.

General Ezanno discussed one tactic which appears to have considerable merit for use in Vietnam, particularly at night, and which points to possible modification of our present tactics and equipment.

> With a chopper, you take the strong point as the center of a large orbit. You keep flying around it at an altitude of about fifteen hundred feet. . . . The answer is to stay high and shoot far. Then you have it. That you can't do with an aircraft. This orbital firing was awfully deadly. In many instances, it was used very successfully without any losses. . . . Also the fallacious tendency was to try to equip choppers with forward armament instead of side armament--we changed that because our experience proved that was no good. . . . When do you see your enemy ahead of you in this type of warfare? You see him from above or sideways--that is why we discarded the axial armament. You must have lateral armament. That is why the axial armament in a helicopter is no good. The same applied to rockets. We tried all that.[58]

The preceeding comments and anecdotes may have value if we apply them intelligently to the situation in Vietnam. One thing is evident; there are as many ways to accomplish a mission as there are people who have the mission of accomplishment. There should be no effort spared however, in critical study of recorded experiences of those who have been down this road before, and application of the knowledge gained to appropriate problems which we face today.

Reducing Vulnerability

In Chapter II, we briefly discussed the problem of antiaircraft fire and vulnerability of aircraft to ground fire in a counterinsurgency air operations. It was suggested that by increasing night air operations we could partially solve this problem.

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[58] Ibid., p. 43.

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Statistics compiled by the Aircraft Losses Operations Analysis Working Group in Vietnam strongly support this suggestion. This group concluded that "given the present VC AA materiel, the hit rates experienced at night should be considerably lower than in daylight due to the difficulty of visual target acquisition and tracking in the dark. . . . The chance of being hit when fired on at night is markedly less than that in the daytime."[59] The following figures support this statement. There were only two aircraft types for which detailed records of ground fire incidents and hits were available--the B-26 and the U-10B. During the three month period, January through March 1964, B-26 pilots detected ground fire on twenty-four occasions during the day and on twenty-seven at night. Of these incidents, actual hits were scored on six aircraft during the day and on one at night. During the period December 1963 through May 1964, U-10B pilots reported eighty-two ground fire incidents during the day and twenty at night, resulting in nine hits during daylight and one at night.[60]

Prior to 1963, ground fire had not been a significant threat to pilots in Vietnam. "It was not until February 1963 that RVNAF observed a rise in antiaircraft incidents and, along with this, a proportionate increase in the number of aircraft receiving hits."[61] This was the period of time when significant increases in total sorties by aircraft of all services were taking place. The increasing threat to the VC undoubtedly caused their emphasis on, and increasing capabilities in, antiaircraft fires.

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[59]Aircraft Losses Operations Analysis Working Group, op. cit., p. 51.

[60]Ibid., p. B-7-2.

[61]Ibid., p. 71.

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The Viet Cong inventory of antiaircraft weapons has steadily improved in quantity and quality. The first American aircraft hit by ground fire was an H-21, hit on 10 January 1962 by small arms fire.[62] The first 50 calibre machine gun hit was sustained in June 1963.[63] A MACV antiaircraft study, conducted in April 1964, predicted that the VC would acquire 37mm guns as their next step in combating the increasing air power of the GVN forces.[64] Additional VC antiaircraft capability was indicated in September 1964 when "HELICOPTER CREWS OF THE 52D AVIATION BATTALION SUPPORTING A SEARCH AND DESTROY OPERATION, REPORTED RECEIVING GROUND FIRE IN THE FORM OF TWO HIGH EXPLOSIVE AND FIVE WHITE PHOSPHOROUS AIR BURSTS FROM AN UNKNOWN TYPE OF WEAPON."[65]

Incident, hit, and loss statistics and improving Viet Cong antiaircraft capabilities and potential dictate that positive measures be taken to prevent aircraft damage and loss rates from reaching prohibitive figures. Col. G. C. Reinhardt, USA, (Ret), in the Rand Symposium on Chindit Operations in Burma made the following comment:

> I believe many have not given enough thought to the impact that antiaircraft weaponry can have on operations of this kind in the future. They say, sure we can take losses--but they do not appreciate the way losses can accumulate in ground support operations. Simple arithmetic tells us we cannot sustain even a one per cent per sortie loss rate. Assuming replacements and three sorties a day, a loss ratio of only one per cent per sortie would call for replacing the entire force in approximately one month. For those

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[62]Director of Army Aviation, op. cit., p. 12.

[63]Aircraft Losses Operations Analysis Working Group, op. cit., p. 7.

[64]George M. Buck, Capt., U. S. Army, "Antiaircraft Study Viet Cong Forces Republic of Vietnam" (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, 14 Apr 64), p. 5.

[65]U. S. Military Assistance Command, Vietnam, op. cit., MILREP Week of 12 Sep 64, p. 4.

accustomed to thinking of much higher loss rates (but at a lower flying rate), this comes as a surprise. But this is what can happen with improved surface-to-air weapons.[66]

To cite a few examples of effectiveness of Viet Cong antiaircraft fire: the last week in June 1964, three air crewmen died, four were wounded and two aircraft were shot down.[67] The week of 20-26 September 1964, United States and Vietnamese air forces lost five aircraft and six received battle damage due to ground fire.[68] These are admittedly extreme weeks insofar as loss statistics are concerned, however, they demonstrate the potential hazard faced by airmen daily in their air operations in Vietnam--a hazard which we assume could be reduced appreciably by increasing night air operations.

There were only four instances found in the MACV MILREPS during the period 11 March 1964 through 31 January 1965 when aircraft were lost or received battle damage on night missions. One A-1E crash landed at Bien Hoa Airfield after receiving hits on a night close air support mission in July.[69] A C-123 flareship received hits on a flare drop mission during the first week of August,[70] and two A-1E's were shot down on a night close air support mission on 23 September 1964.[71]

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[66]A. H. Peterson, G. C. Reinhardt, and E. E. Conger, "Symposium on the Role of Airpower in Counterinsurgency and Unconventional Warfare: Chindit Operations in Burma," Memorandum RM-3654-PR (Santa Monica, California: The Rand Corporation, Jul 63), p. 43.

[67]U. S. Military Assistance Command, Vietnam, op. cit., MILREP Week of 27 Jun 64, pp. 5-6.

[68]Ibid., MILREP Week of 20 Sep 64, p. 3.

[69]Ibid., MILREP Week of 11 Jul 64, p. 15.

[70]Ibid., MILREP Week of 1 Aug 64, p. 12.

[71]Ibid., MILREP Week of 20 Sep 64, p. 14.

If we are to continue our air activity in Vietnam at the same or increasing levels during the coming months, it appears obvious that night must be more fully exploited if we are to avoid losses and damage at rates which cannot be sustained indefinitely even by the affluent "Uncle Sam."

Specific tactics and missions which can be performed with effectiveness at night and which are now bearing the brunt of VC antiaircraft fires during daylight missions, are low level strafing and napalm passes by fighter-bombers, C-123 defoliation missions, and heliborne assaults.

While more ground fire hits have been sustained on napalm passes than any other kind,[72] napalm is recognized as one of the most effective weapons employed in Vietnam, and as such should be used whenever appropriate targets are available. Emphasizing performance of napalm strikes at night would appear to offer a solution to the ground fire hit rate on this type of mission. In addition, burning napalm also provides an excellent aiming point or reference point for subsequent passes using other types of ordnance.

It is conceivable that defoliation missions, in some parts of Vietnam, could be conducted successfully at night using TIARA grenades or similar marking devices to set up initial points for low level runs. In consideration of the fact that C-123 aircraft presently receive ground fire hits on almost every defoliation mission flown, perhaps the hazards of night low level flight might well be less than those experienced due to Viet Cong gunners on the ground. By painting these aircraft as well as other combat aircraft with non-reflective paint and by installing radio altimeters and flame dampers on engine exhausts, night missions

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[72]Aircraft Losses Operations Analysis Working Group, op. cit., p. 66.

of all types may be flown with little if any interference by or loss due to ground fire.

The heliborne assault mission at night presents many problems normally not encountered during daylight operations. However, daylight heliborne missions have experienced an ever increasing number of ground fire hits and aircraft losses. The very nature of their mission makes the helicopter in an assault landing the most vulnerable of all aircraft. Again, the reduced vulnerability of aircraft at night could and should be exploited to even the score.

Final recommendations made by the Aircraft Losses Operations Analysis Working Group summarize very effectively the major problems associated with applying tools of the trade and tactics and techniques for counterinsurgency operations in the air. Although only one of the recommendations specifically makes reference to night air operations, by flying at night we may directly or indirectly solve or eliminate each of the remaining vulnerability problems, and, in addition, improve our overall capability to provide effective and decisive air support. These were the recommendations:

a. That increased emphasis be placed on the requirement for proper planning of air assault operations.
b. That joint and combined SOP's be developed for air assault operations in order to reduce planning time.
c. That single user frequencies be established and that an analysis of frequency allocation and assignment be made.
d. That detailed study be made to determine what equipment is available and required to provide necessary communications between aircraft and ground units.
e. That a concerted effort be made to encourage ARVN forces to use artillery in a fire suppression role in conjunction with air assault operations.
f. That air strikes be scheduled in conjunction with all helicopter assault landings to reduce antiaircraft fire.
g. That every effort be made to obtain improved air delivered weapons for use in Viet Nam.

h. That each mission be studied to determine the method by which aircraft can remain in the antiaircraft fire envelope for as short a time as possible while obtaining the effectiveness required.
i. That each strike aircraft carry the maximum effective load in terms of weight and or store stations available.
j. That the FAC be provided a higher performance aircraft.
k. That night air operations be increased.
l. That protective armor for aircraft be increased, provided the load carrying capability will not be severely limited or the center of gravity seriously disturbed.[73]

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[73] Ibid., p. 111.

CHAPTER V

EVOLVING DOCTRINE FOR COUNTERINSURGENCY

Night air operations are evolving as doctrine for employment of air power in counterinsurgency.

In developing this thesis, night, as an entity, was examined from a military point of view considering those factors which mitigate against and those factors which favor its use, on the ground, in the air, and in Vietnam. An analysis of the development of night air operations in Vietnam from 1962 through 1964 led to examination of equipment, tactics, techniques, and procedures used in Vietnam as well as in other counterinsurgency wars, and to an evaluation of the effects of these procedures on aircraft vulnerability.

The following conclusions may be drawn from examination and analysis of this relatively short period of military history:

(1) Night is a natural enemy to friend and to foe, on the ground or in the air.

(2) Night, when properly exploited, may be an ally to friend and to foe, on the ground or in the air.

(3) Night air operations against insurgent forces may be conducted effectively, efficiently, and with reduced vulnerability to ground fire.

(4) Through testing and experimentation, new equipment, weapons, tactics, and techniques are geing developed or adapted which will continue to improve the effectiveness of night air operations in counterinsurgency.

These conclusions do not express profound insight into the past nor

do they predict startling innovations for the future. They are simply a summary of facts which emerged from a detailed examination of night air operations in Vietnam.

Speed is not a characteristic of doctrinal development or changes in military thought. The evolution of doctrine set forth in this paper has taken place during the past twenty years. It will no doubt require additional years to fully evolve.

Although great volumes of material have been written on the subject of counterinsurgency, the treatment of night air operations in this type of warfare has been conspicuous by its absence. No single document has been found which addresses the problems of night air operations in unconventional war or which indicates specific effort toward doctrinal development in this area. In view of the favorable results achieved through use of this element of our military posture, additional emphasis on night air operations must be forthcoming.

The underlying current to historical facts which form a basis for the thesis, is this changing emphasis. While subtle and snail-like, it has had a significant influence on counterinsurgency air operations. With the passage of time, it will eventually result in the expenditure of direct effort toward exploiting the full potential of air power capabilities to contribute more effectively to counterinsurgency warfare.

Changing emphasis is the theme upon which the conclusions are based: a theme which is inherently evolutionary. The thesis is valid, based on this changing emphasis alone, therefore, we devote the final chapter to substantiation of the fact that a change in emphasis <u>is</u> occurring and that military men of all services are becoming increasingly aware of the value of night operations in counterinsurgency.

A Changing Emphasis

The most noteworthy indication that night air operations are evolving as doctrine for counterinsurgency is found in the recent emphasis which the U. S. Air Force has placed on training of Tactical Air Command pilots. This emphasis has its roots in actions and policies expressed over ten years ago.

A Joint Air-Ground Operations Conference was conducted in Korea shortly after cessation of hostilities in 1953. This conference concluded, among other things, that,

> The utilization of fighter-bomber aircraft on night close air support missions and also on night interdiction work, should be explored further. More extensive utilization would involve many apparent problems such as proper target identification, pilot experience levels, and increased terrain hazards, but it is felt as a result of past experience, that these night activities are sufficiently effective to encourage further evaluation.[1]

In 1954, the U. S. Air Force Air Proving Ground Command performed such an evaluation to determine the best tactics and techniques for employment of night tactical air power. Major General Patrick W. Timberlake, Commander of the Proving Ground, commenting on the test results, made the following statement:

> It has been determined that the use of jet fighter-bombers in the night tactical air attack role is entirely feasible under certain conditions. . . . It is believed that the whole doctrine for the employment of fighter-bombers should be re-examined, and the scope of the concept of tactical air warfare be broadened to take advantage of this unexploited potential.[2]

Later in 1954, upon completion of the test mentioned above, Air Proving Ground Command conducted a suitability test of a fighter-bomber squadron for night tactical air attack. One of the conclusions drawn from

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[1]William J. Yates, Col., USAF, "Report on Joint Air-Ground Operations Conference" (Seoul, Korea: Headquarters, Fifth Air Force, 8-22 Aug 53), p. 21.

[2]Air Proving Ground Command, "Final Report on Fighter-Bomber Tactics and Techniques for Night Tactical Air Attack," Project No. APG/TAT/22-A-8 (Eglin Air Force Base, Florida: Air Proving Ground Command, 1 Jul 54), Letter of Transmittal.

this test was that, "The application of day fighter-bombers to night operations is sufficiently effective to warrant immediate integration of this capability in the United States Air Force."[3] However, the proposal for "immediate integration" of a night air capability in the USAF was not immediately accepted. Although there were limited numbers of night missions included in the annual flying training program of Tactical Air Command, during the ensuing eight years, little, if any, emphasis was placed on improving TAC's night fighting capabilities. The nomenclature of "Fighter Day Wing" was an apt designation for TAC fighter-bomber units during this period. It is also appropriate to say that there was considerably more emphasis placed on the "fighter" aspects of training than on the close support role. Air superiority and tactical nuclear weapons delivery were, at that time, and remain today, the primary missions of TAC. However, during the past three years, additional effort has been expended to improve the capability of air to support ground operations. The U. S. Army-U. S. Air Force Close Air Support Board study, published in August 1963, concluded that there was, "a basic weakness in the field of tactics and techniques for close air support. Inadequate effort has been expended in developing ways and means of integrating air fires with ground fires in support of ground operations, including air support of night operations of small units."[4] The changing emphasis within TAC on close air support

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[3]Air Proving Ground Command, "Final Report on the Operational Suitability Test of a Fighter-Bomber Squadron for Night Tactical Air Attack," Project No. APG/TAT/128-A (Eglin Air Force Base, Florida: Air Proving Ground Command, 27 Dec 54), p. 12.

[4]U. S. Army - U. S. Air Force Close Air Support Boards, "Joint Final Report U. S. Army - U. S. Air Force Close Air Support Boards" (Fort George G. Meade, Maryland: Office of the Adjutant General, Headquarters, Second United States Army, Initial Edition, Vol. IV, Aug 63), Annex H, p. 4.

in general is not pertinent to this paper, however, actions in regard to night air operations during the past few years are relevant.

Tactical Air Command initiated two programs during the spring and summer of 1963. TAC Test Order 62-66 directed the USAF Fighter Weapons School, at Nellis Air Force Base, Nevada, to conduct an evaluation of tactical fighter aircraft to conduct night air attacks.[5] This evaluation was completed in August 1963. In July 1963, TAC Operations Plan 10-63 (NIGHT OWL), directed two fighter wings to conduct weapons delivery training at night and to develop a recommended training program for all TAC fighter units. The results of these two programs were published as TAC Supplements to Air Force Training Manuals in June and July of 1964.[6] Follow-on tests were conducted at Nellis Air Force Base during the period 18 October to 12 December 1964 (phases III, IV, and V of NIGHT OWL training), and night joint fire exercises have been conducted as recently as February 1965 at Fort Hood, Texas.[7] It is readily apparent that night air operations are beginning to take a justifiably prominent position in the employment of tactical air power. Brigadier General W. D. Dunham, Deputy Commander for Direct Air Support, Twelfth

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[5]One wonders if the results of the APGC test of 1954 were considered invalid or if that test and its results were simply unknown to TAC staff officers in 1963.

[6]4520th Combat Crew Training Wing, "Report on Night Weapons Training," (Nellis Air Force Base, Nevada: 4520th Combat Crew Training Wing, Dec 64), p. 1. (TAC Supplement 2 to AFM 51-100, F-100D/F Aircrew Training Manual, 5 Jun 64, outlines night weapons delivery training requirements, and TAC Supplement 1 to AFM 55-100, Operational Procedures for F-100C/D/F Aircrews, 8 Jul 64, outlines procedural requirements for low level bombing (night), strafe (night), and MK-24 flare releases.)

[7]R. Woody, III, Lt. Col., "Tactical Demonstration Final Report," RCS TAC V12, A Report of TAC Mission Number FF-1066, Flown at Fort Hood, Texas, 11 Jan through 11 Feb 65 (Waco, Texas: Office of Deputy Commander for Direct Air Support, Headquarters, Twelfth Air Force (TAC), n. d.), p. 1.

Air Force (TAC), indicated in his leter of transmittal of the 1964 Report on Night Weapons Training that, "this should be one of our top projects for all Army units during 1965."[8]

Training of additional pilots for night operations is a priority project throughout TAC under the "NIGHT OWL" program. As a result of this training it is anticipated that many lessons will be learned which have direct application for night air operations in counterinsurgency.

In consideration of the apparent increase in emphasis and interest in night air operations within the U. S. Air Force, we could perhaps assume that a doctrine for the employment of air power at night has evolved, and simply leave it at that. However, the key words in the thesis are "doctrine for counterinsurgency." We have, we believe, adequately documented the peculiar problems associated with night air operations in a counterinsurgency war, and many of the lessons learned in tactical air support of Army units at Fort Hood during night maneuvers may well be applicable to the air support requirements in Vietnam or future unconventional wars. However, there would appear to be a fertile field for further testing of modern tactical fighter-bombers in close support of small units operating in jungle terrain. It is also important to emphasize the need for further testing of other types of night air support. We have perhaps become overly enamoured with "close" air support. There is always the danger of neglecting air operations which, in a counterinsurgency war, may have significantly more meaning and give greater return for our efforts. It may be appropriate to re-define "close air support" when that term is used in a counterinsurgency frame of reference. Air attacks on a Viet Cong unit deep in the jungle with

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[8] 4520th Combat Crew Training Wing, op. cit., Letter of Transmittal.

an express purpose of driving that unit into positions where government forces can engage them successfully; air strikes on Viet Cong supply dumps which necessitate their movement to other areas more vulnerable to government action; night paraflare drop missions which cause the VC to lose the advantages darkness normally give him; or night missions by "speaker" equipped aircraft offering inducements to the insurgent to surrender--is this not "close air support"? We feel, in counterinsurgency warfare, that it is; and that by employing air power at night in this way, as well as in the "normal" manner, when the situation warrants, this power will prove to be an increasingly important and worthwhile weapon in fighting unconventional wars. In support of this position, a lengthy but pertinent quote from a Rand Corporation study on counter-insurgency and air power is appropriate.

> Against insurgents air power has many roles to play in addition to direct attacks against enemy personnel and equipment. For example, it may be employed to inhibit enemy movement, to pin down enemy ground forces when they are being attacked, to protect and screen the movement of friendly forces, to divert attention from patrol activities, etc. . . . The effectiveness of tactical air operations can be enhanced if their important psychological and indirect effects are considered in advance and if the operations are conducted so as to maximize these effects. The doctrine for the tactical employment of air power may need to be broadened somewhat to encourage greater efforts to exploit psychological and indirect effects. And to supplement standard types of ordnance, the Air Force should consider undertaking the development of a variety of unconventional weapons having primary psychological rather than casualty-inflicting effects. . . . Attention should be given to the employment of air power for the following purposes:
>
> (1) To secure increased mobility for beleagured friendly forces in critical combat situations by air actions which inhibit the fire and maneuver of insurgent forces;
>
> (2) To impose critical delays upon insurgent forces and reduce their mobility;
>
> (3) To impose undesired, involuntary movements upon insurgent forces;
>
> (4) To impose increased physical strain and non-combat casualties upon insurgent forces by means of air harassment.
>
> Basically, the problem of matching the characteristics of air power more effectively with the nature of guerrilla warfare consists of finding ways to satisfy requirements for target acquisition, rapid

transmission of target intelligence, and timely and effective allocation of combat sorties to the targets. Consideration must be given to (1) the possible adaptation and extension of the uses of high performance air-weapon systems by means of appropriate modifications of equipment, and (2) the generation of new equipment and new operations techniques which are better tailored to the lower levels of violence characteristic of guerrilla warfare.[9]

While emphasis on night air operations by TAC is the key indicator which points to a changing emphasis, there are other significant indicators which demonstrate a conversion to employment of the night for counter-insurgency operations. Perhaps one of the most easily recognized of these is the gradual change in ground forces emphasis from large unit daytime actions to smaller unit operations at night.

To graphically illustrate this change and the encouraging results obtained therefrom, we have portrayed the employment of ground forces in Vietnam from 11 March 1964 through 31 January 1965 in chart form. As in Chapter III, we will indicate the purpose of each chart and comment on the apparent trends and conclusions which may be drawn. As a medium for further expansion of the concept of changing emphasis, appropriate comments which relate to the general category of the chart will be incorporated into the conclusions portion of each chart.

Before examining these statistical illustrations, we reiterate that air operations of any kind are only worthwhile as their results relate to the employment of ground forces. Air power alone may have significant effects on the course of battle, but the ultimate decision can only be reached when all facets of our military posture are brought to bear in a coordinated effort. This is the reason that an apparent

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[9]H. Speier et al, "Counter-Insurgency and Air Power: Report of a Rand Ad Hoc Group," Memorandum RM-3203-PR (Santa Monica, California: The Rand Corporation, Jun 62), pp. xi-xii.

change in doctrine for counterinsurgency ground operations has significance for counterinsurgency air operations, and this is why we include a rather detailed analysis of the changing emphasis in the employment of forces on the ground as an analysis pertinent to the conclusions of this thesis.

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Chart 8

BATTALION NIGHTS IN THE FIELD

Purpose: To illustrate the weekly totals of battalion nights spent in the field.

Apparent trend: The trend is decidedly downward throughout 1964. During the first 23 weeks, the total battalion nights in the field was 9347. During the last 23 weeks, the total dropped to 7882; a decrease of almost 16 per cent.

Conclusions: While battalion operations in conventional warfare might be considered small unit operations, in counterinsurgency warfare, a battalion is a relatively large unit. In July 1963, the Army Concept Team in Vietnam stated that in counterinsurgency warfare, "battalion and regimental operations are the rule. Coordinated division and corps operations are infrequent and there is good argumentation for a great increase in company and platoon size operations."[10] The decreasing totals on this chart are significant in that, taken by themselves, they indicate an apparent reduction in emphasis on the use of larger forces in night operations (the statistics in Chart 9 tend to offset this apparent trend). This decrease in emphasis (if our assumption is correct) has important ramifications for supporting air forces. The organic communications in a battalion size force would normally be superior (if only in number) to those of an independent

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[10]Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, "Evaluation of Test Results of the Employment of OV-1 (Mohawk) Aircraft in Support of Counterinsurgency Operations" (Saigon, Vietnam: Office of the Director Advanced Research Projects Agency, Field Unit, Vietnam and Joint Operation Evaluation Group, Vietnam, 19 Jul 63), p. 1.

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company or platoon, and hence the problems of coordinated air strikes, controlled from the ground, become more complex and difficult when these operations are in support of small units.

These figures are particularly important to note in relation to the figures in Charts 10, 11, and 12, which illustrate the increasing employment of smaller units.

CHART 8

BATTALION NIGHTS IN THE FIELD

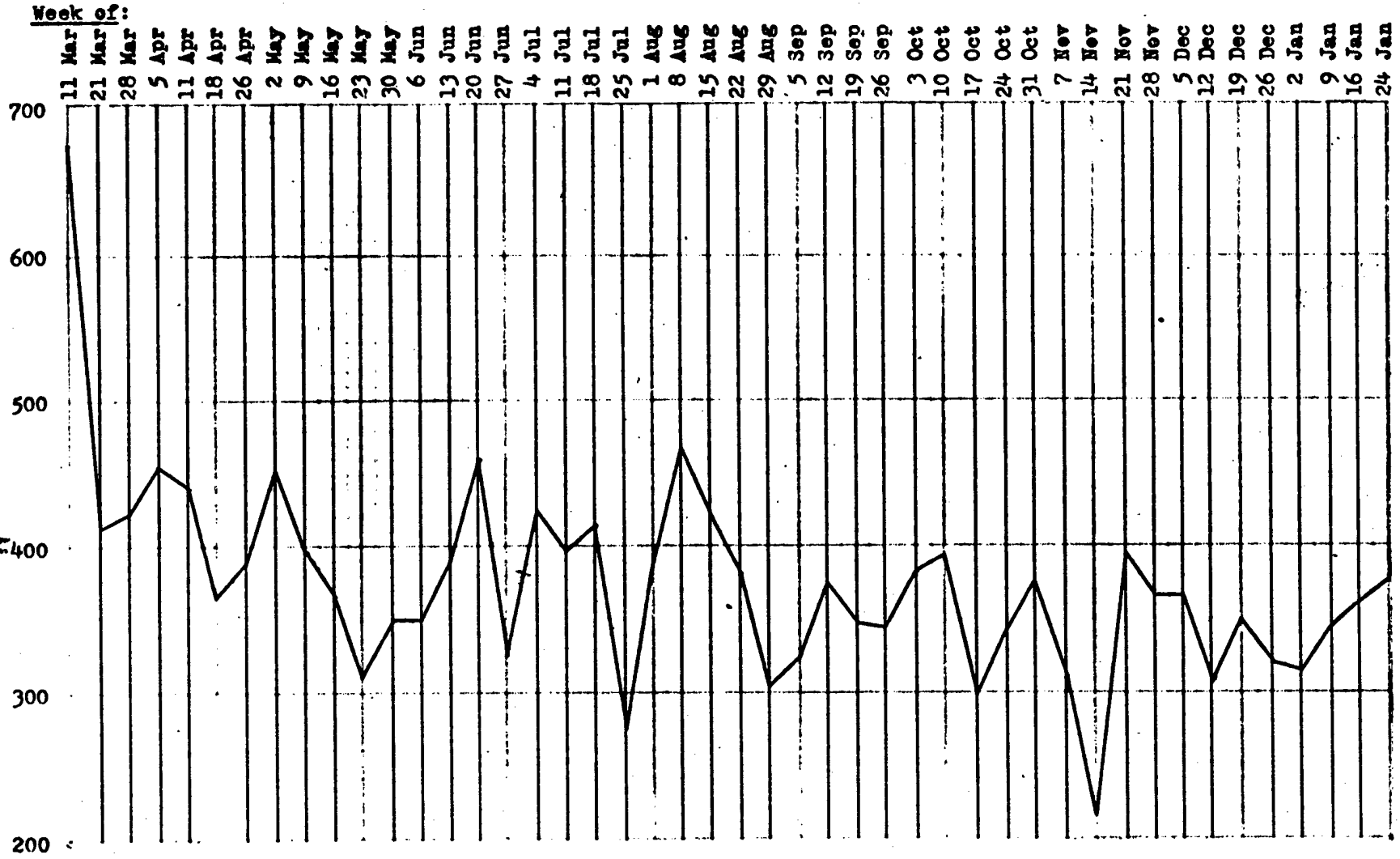

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Chart 9

BATTALION OPERATIONS INITIATED PRIOR TO DAYLIGHT

Purpose: To illustrate the employment of battalion size forces in night operations.

Apparent trend: Although not immediately noticeable, the trend in operations initiated by battalions at night is upward. During the first 23 weeks there were a total of 602 operations initiated prior to daylight. During the last 23 weeks this figure increased to 679; an increase of almost 13 per cent.

Conclusions: Comparison of Charts 8 and 9 seems to indicate that while battalion nights in the field decreased appreciably, the offensive activities of those units which were employed at night was increasing by a comparatively equal amount. If we add the percentage decrease in battalion nights in the field to the percentage increase in these units' night activities, the overall increase in emphasis on night operations for battalion size units totals almost 30 per cent. Results of this emphasis, measured in actual numbers of night contacts with the Viet Cong, were not immediately apparent as indicated in the MACV MILREP for the week of 22 March 1964.

> SOME VERY ENCOURAGING RESULTS WERE OBTAINED FROM OPERATIONS STARTING IN THE EARLY MORNING HOURS, BETWEEN 0300H AND 0600H. ALTHOUGH FEW OF THESE OPERATIONS MADE CONTACT BEFORE DAYLIGHT, THE MAJORITY MAKING CONTACT, DID SO SHORTLY THEREAFTER. THIS INDICATES THAT ARVN UNITS ARE UTILIZING THE HOURS OF DARKNESS TO MOVE INTO THE OPERATIONAL AREA.[11]

However, three weeks later, continuing emphasis on night operations was resulting in significant numbers of night contacts.

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[11] U. S. Military Assistance Command, Vietnam, "Military Reports," Published Weekly, 11 Mar 64 through 31 Jan 65 (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam), MILREP Week of 22 Mar 64, p. 14.

RESULTS CONTINUE TO BE ENCOURAGING WITH OVER THRITY PERCENT OF THE NIGHT OPERATIONS MAKING VC CONTACT.[12]

Night air support of this type of ground operation can be utilized effectively by providing pre-planned flare drops to facilitate night movement and by pre-planning fire support to pin down VC forces trying to evade the ARVN ground action. Planning and training are the key factors in this regard.

During 1962, one of the biggest problems encountered in providing air support to ground forces was the lack of advanced knowledge of ARVN movements. Without this knowledge, Air Force advisors were handicapped in their attempts to provide adequate air support for many of the ground operations which could have used this support to good advantage. By early 1963 the Air Force had begun to receive a limited number of requests for routine cover missions for convoys or major ground operations and was able to allocate sorties or provide ground alert aircraft as appropriate.

USMACV Directive 95-4, "Air Operations," published in September 1964, illustrates the increased efforts of air and ground forces to provide effective air support by improved coordination of planned operations.

> Senior advisors will insure pre-planning considers the use of air support for all ground operations. Plans for movement of convoys and trains, ground reconnaissance patrols, security forces and quick reaction units will include provisions for using available air support as appropriate to the requirement.[13]

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[12] Ibid., MILREP Week of 5 Apr 64, p. 12.

[13] U. S. Military Assistance Command, Vietnam, Directive No. 95-4, "Air Operations" (Saigon, Vietnam: U. S. Military Assistance Command, Vietnam, 7 Sep 64), p. 6.

An acknowledged prerequisite to effective night air support is a complete, detailed knowledge of the planned operation, and, where possible, face to face briefings between airman and soldier.

The MACV MILREP for the week of 1 August further illustrates the emphasis given to planning for air support of ground forces.

> CHANGES IN FLARESHIP OPERATING PATTERNS AND CAPABILITIES HAVE BEEN OBSERVED THIS WEEK. THE FLARESHIP ALERT POSTURE HAS BEEN IMPROVED TO PERMIT RESPONDING TO LOWER PRIORITY REQUEST. SEVERAL GROUND OPERATIONS AND SHIP MOVEMENTS HAVE RECEIVED AIRBORNE ALERT FLARESHIP SUPPORT. IN MANY CASES FLARESHIPS RESPONDED TO GROUND REQUESTS TO SUPPORT OUTPOSTS UNDER HARASSMENT ONLY, OR WHERE AN ATTACK WAS SUSPECTED BUT NOT IN PROGRESS.[14]

Planning and training go hand in hand. Training for night operations is particularly important. U. S. Army Field Manual 20-60, Battlefield Illumination, emphasizes this point in the following statement:

> Ground units should request flare missions in order that both air and ground personnel can become familiar with the teamwork necessary to provide battlefield illumination.[15]

If we interpret the statistics of Charts 8 and 9 as illustrating a decreasing number but more carefully planned employment of battalion size forces at night, the importance of providing increased and more effective air support to these operations is paramount. This effectiveness can be enhanced to a great degree by continued emphasis on joint training.

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[14]USMACV, op. cit., MILREP Week of 1 Aug 64, p. 12.

[15]U. S. Department of the Army Field Manual 20-60, Battlefield Illumination (Washington, D. C.: U. S. Department of the Army, Oct 64), p. 25.

CHART 9

BATTALION OPERATIONS INITIATED PRIOR TO DAYLIGHT

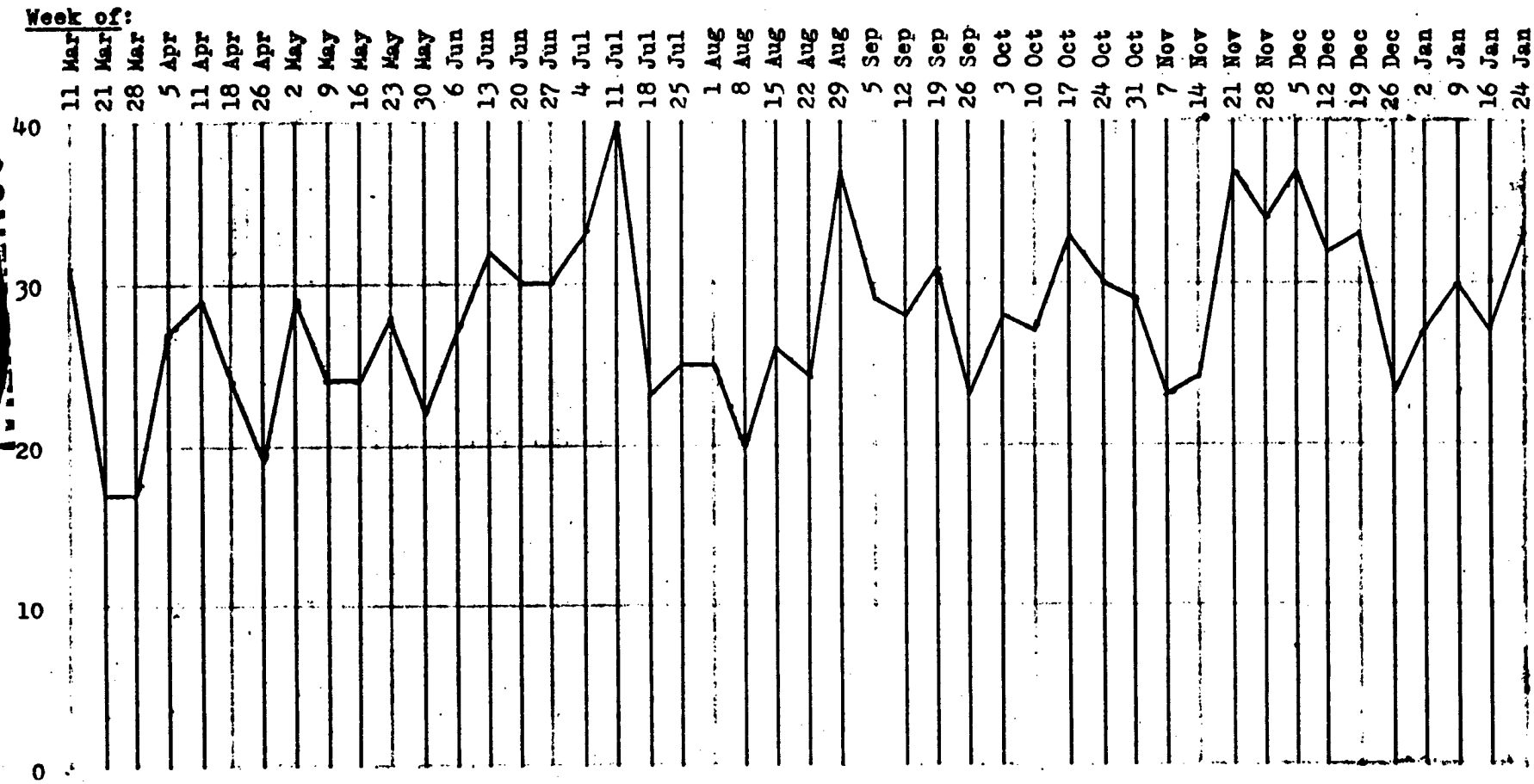

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Chart 10

TOTAL SMALL UNIT ACTIONS

Purpose: To illustrate the weekly totals of small unit (less than three rifle companies equivalent) actions. The MILREPS do not make a distinction between day and night actions, therefore, the figures in this chart represent a combination of all small unit actions without regard to the time of day during which the actions occurred.

Apparent trend: The trend illustrated in this chart does not rise as sharply as it would first appear. On 1 July 1964, the ARVN changed their reporting criteria to include units down to squad size.[16] This accounts for the sharp rise in totals during the first two weeks in July. However, notwithstanding, the trend in small unit operations is still significantly upward.

Conclusions: One conclusion which we may draw from these statistics is that the ARVN has emphasized the importance of small unit operations, and if we examine the results of this emphasis, as illustrated in Charts 11 and 12, the effectiveness of small unit operations becomes apparent.

In an attempt to apply the information contained in this chart to night air operations it was first necessary to determine an estimate of the percentage of total actions which were conducted at night. The following technique appears to be a logical method for making this determination:

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[16] USMACV, op. cit., MILREP Week of 4 Jul 64, p. 2.

Total small unit actions	529,125	(Chart 10)
Total small unit actions with day contact. . .	2,849	(Chart 11)
Total small unit actions with night contact. .	1,346	(Chart 12)
Total small unit actions with contact.	4,195	

Thirty-two per cent (1,346 out of 4,195) of the contacts were made at night. We could perhaps assume that 32 percent of the actions also took place at night, however, recognizing that there is probably a greater likelihood of contact with the Viet Cong during daylight than during darkness (particularly in the employment of small units), we have arbitrarily reduced this figure to 25 per cent (this figure is in consonance with Army estimates of the percentage of operations for which night air support is required in conventional warfare, as stated in the Close Air Support Board findings of 1963).[17] If we accept this figure, then 132,281 (25 per cent of 529,125) small unit actions were conducted at night (an average of 410 per night, country-wide).

It becomes readily apparent that a capability to provide air support to operations of this magnitude requires considerable effort and planning, even if air support is only applicable and appropriate to a small percentage of these operations.

It is believed that few people fully comprehend the scope of ground activity which has and is taking place in Vietnam. To provide night air support which is truly effective in counterinsurgency warfare, commanders at all echelons must not only emphasize its use but

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[17]U. S. Army - U. S. Air Force Close Air Support Boards, op. cit., Tab S to App. 3 to Annex F

must be aware of its capabilities and limitations. An increase in emphasis on small unit actions must be accompanied by an increased effort on the part of air officers to provide the means and procedures to support this type of activity.

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CHART 10

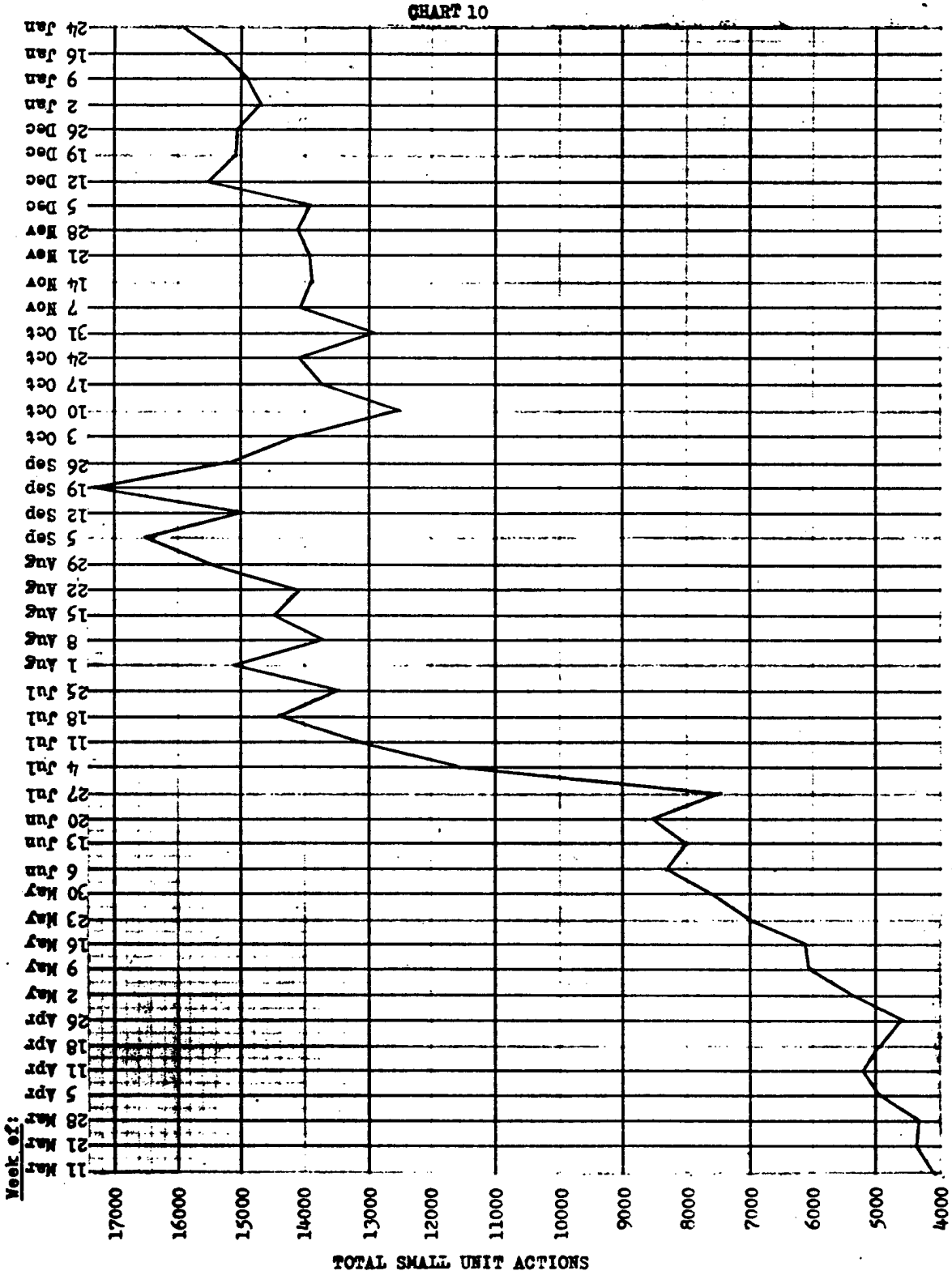

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Chart 11

SMALL UNIT ACTIONS WITH DAY CONTACT

Purpose: To illustrate the numbers of small unit actions in which contact was actually made with Viet Cong forces during daylight.

Apparent trend: While considerable variation is noted from week to week in the numbers of contacts, the overall trend is again decidedly upward. Total actions with contact during the first 23 weeks was 1194. During the last 23 weeks the total was 1655, an increase of almost 39 per cent.

Conclusions: Recognizing that the level of VC activity was also increasing throughout 1964, it is still significant to note the improved results of small unit actions and their apparent ability to ferret out the Viet Cong. It would appear that emphasis on small unit actions is bearing the fruit of success which its advocates have long professed.

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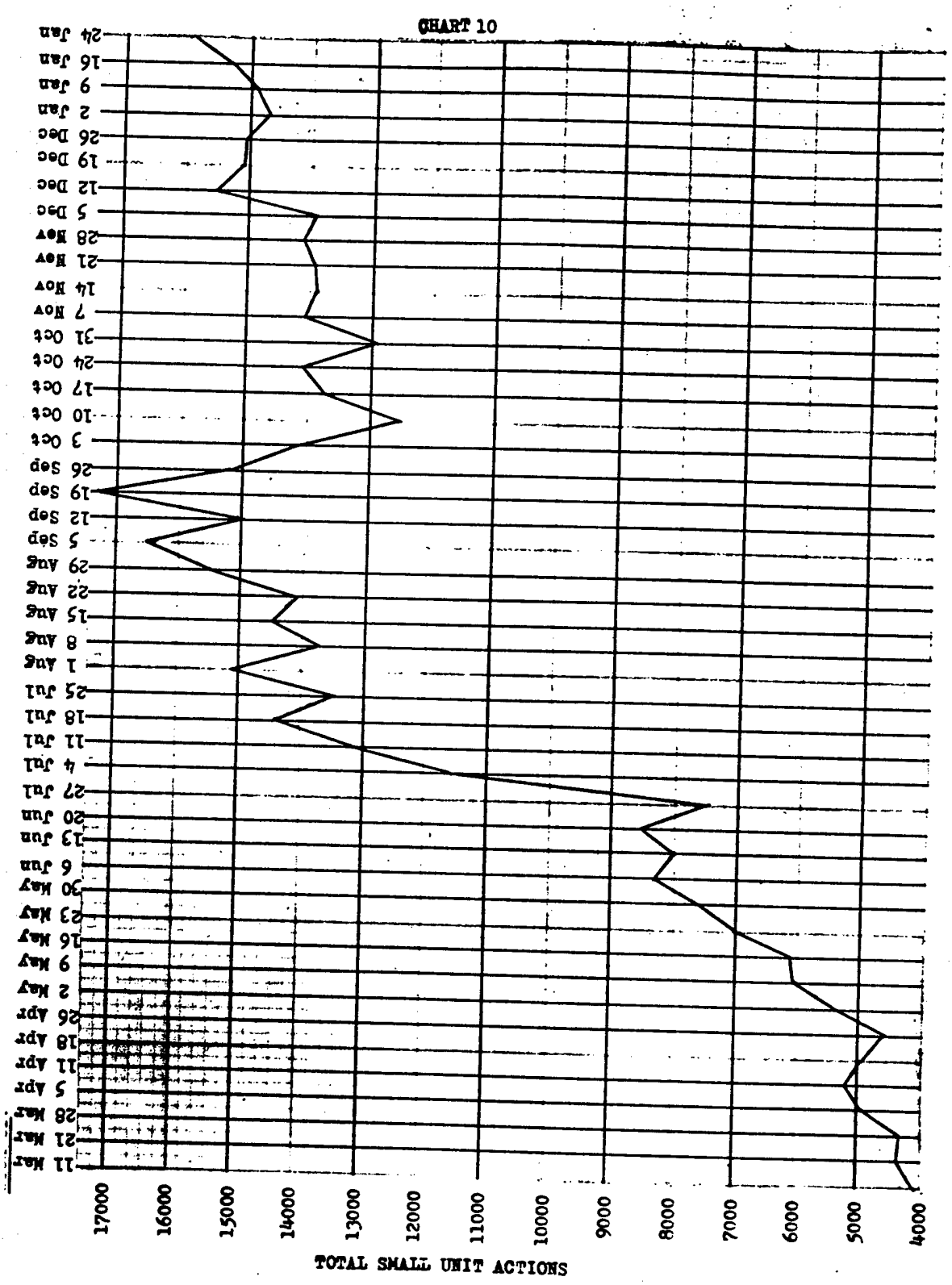

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Chart 12

SMALL UNIT ACTIONS WITH NIGHT CONTACT

Purpose: To illustrate the number of small unit actions in which contact was actually made with VC during the hours of darkness.

Apparent trend: While the trend is unmistakably downward during the first seven months of the reporting period, the trend during the last four months is even more markedly upward.

Conclusions: Several conclusions may be drawn from this chart. First, we might assume that the increasing emphasis on small unit actions by the ARVN tended to decrease the VC night movement during the first part of the year and hence the number of contacts. The assumption that VC activity was influenced by the increase in emphasis on small unit actions is supported by a comment contained in the MACV MILREP for the week of 30 May 1964.

> ARVN 2ND DIVISION UNITS IN QUANG NAM PROVINCE HAVE BEEN HAVING A CONSIDERABLE DEGREE OF SUCCESS IN SMALL UNIT NIGHT OPERATIONS. THEY HAVE CONDUCTED AMBUSHES AT NIGHT, IN THE EVENING TWILIGHT AND JUST BEFORE DAWN IN CRITICAL AREAS. . . . IN ADDITION TO CONDUCTING AMBUSHES, THEY HAVE ATTACKED THE VC AT VARYING TIMES DURING THE NIGHT REGARDLESS OF THE WEATHER AND THE TERRAIN. . . . CAPTURED DOCUMENTS REVEAL THAT THE VC BELIEVE THAT ARVN IS APPLYING COUNTER GUERRILLA TACTICS LEARNED FROM MAYLAYA.[18]

Secondly, we may conclude that as ARVN proficiency in small unit actions improved, they were able to conduct an increasing number of night operations which resulted in contact with the VC. Again, we recognize that all operations were on the rise during the latter months of 1964, however, the very sharp increase in contacts during this period can certainly be attributed, in part at least, to improved tactics and increased emphasis.

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[18] USMACV, op. cit., MILREP Week of 30 May 64, p. 11.

The ramifications for night air operations are important in this respect also. Night close air support of small units is not always practicable, however, as we have previously redefined "close air support," there are many missions which can and have been flown which may contribute directly to the increasing success of the small unit on the ground. Of particular value is the use of air dropped flares. With proper planning and compatible communications, the air-ground team can be expected to yield truly significant results.

While we have indicated that the emphasis on small unit operations was promulgated by ARVN, "A POINT OF INTEREST IS THAT, OF THE TOTAL SMALL UNIT NIGHT OPERATIONS WHICH PRODUCED VC CONTACT, 92 PERCENT WERE CONDUCTED BY THE PARA-MILITARY (SDC, CG, CIDG)."[19] This emphasis by paramilitary forces continued throughout 1964.

> COMPARISON OF OFFENSIVE OPERATIONS CONDUCTED BY CIDG FORCES DURING MONTH OF SEP INDICATED A TEN PER CENT INCREASE IN CIDG INITIATED AMBUSHES (2883) AND A FIFTY PER CENT INCREASE IN NIGHT OPERATIONS (2959).[20]

If we are to continue improving the results of this type of operation, and if this employment of ground forces remains Army doctrine for counterinsurgency, it is incumbent on supporting air forces to provide that measure of air power appropriate to the need. General Blumentritt went so far as to state that, "the best thing to do is to build up special night air forces trained specifically for

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[19] Ibid., MILREP Week of 5 Apr 64, p. 12.

[20] Ibid., MILREP Week of 3 Oct 64, p. 23.

cooperation with ground forces."[21] Air Force doctrine provides a capability which falls somewhat short of this ideal, however, increased concentration on training for night air operations should provide forces which are fully capable of effective air operations, day or night, with ground forces of any size and composition.

The problems of night air support of small units in jungle terrain are many and difficult, however, the capability and potential is there if we but expend the effort to overcome the obstacles.

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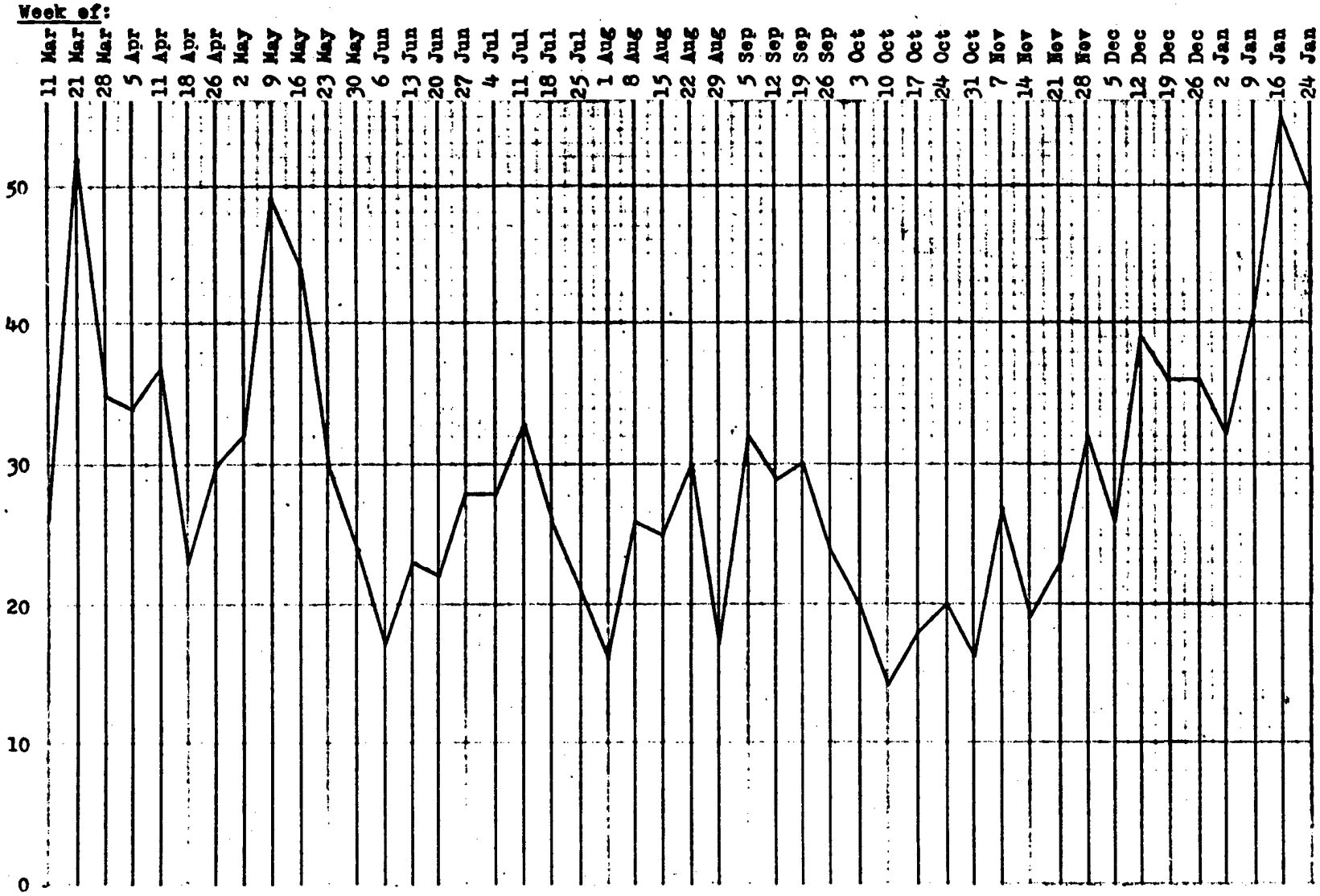
[21]Guenther Blumentritt, General der Infanterie a.D., "Operations in Darkness and Smoke," Manuscript No. B-683, Trans. A. Schroeder, Ed. H. Hertman, Originally prepared by Historical Division European Command, Foreign Military Studies Branch (Washington, D. C.: Office of the Chief of Military History, Department of the Army, 1952), p. 16.

CHART 12

SMALL UNIT ACTIONS WITH NIGHT CONTACT



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COIN in the Future

Evolution implies continuance. Evolving military doctrine is perhaps one of the best examples of this never-ending change. In the case of specific doctrine for counterinsurgency, the history which pertains to its evolution does not cease to be made, with the doctrine then emerging as a finite set of rules. What has transpired serves only as a base upon which we may build near range predictions as to what will transpire in the future. Even as we make these predictions, current developments may reshape our estimate of what the doctrine will be. The reality of time, however, forces us to pause long enough to take a calculated stab at determining the implications of history for the future.

We will not attempt to document, to any great degree, our predictions, as such documentation would, in itself, be based only on what has gone before, and therefore is subject to the same limitations and fallibilities which affect our own predictions.

This is how we see night air operations in counterinsurgency during the months and years to come:

Night air operations in future counterinsurgency wars will be conducted using equipment and forces available at that time. These resources will be employed using techniques appropriate to the geographical, political, military, and economic environment which we face. The best judgment of the military operators who are charged with the mission will be applied, with results being largely dependent on their knowledge, experience and training.

The emphasis which is currently being placed on night air operations will provide trained personnel and equipment designed, or specifically adaptable, for conduct of these operations. The capabilities of

these personnel and of this equipment will produce increasingly effective results in the employment of air power at night.

Although we may assume that with trained people, tailored equipment, and specific doctrine the conduct of future counterinsurgency warfare will be night oriented at the outset, we must recognize that a certain amount of groping will take place in the beginning of any insurgent war. Lieutenant Colonel M. W. Sutcliffe (British Army), in a Rand Corporation symposium observed that,

> The pattern of war changes. By the time it was possible to organize. . . good strikes, so many other things had happened that I think future operations might begin exactly the same as they did [in Malaya]. In the early stages you don't have contacts or information channels set up. You are fighting a sort of indiscriminate war in which you must take some action.[22]

This was the pattern in Vietnam and it will be repeated in future counterinsurgency wars. We can surmise, however, that the lessons of Vietnam will, to some extent, accelerate our ability to implement the most effective operations regardless of environment.

We can predict that greater emphasis will be placed on combined night operations employing highly trained small infantry units supported by pre-planned artillery, air, and naval gunfire. The air support will be a mix of low and high performance fighter-bombers, helicopters (armed and unarmed), and large and small cargo, liaison, and general support aircraft.

A Rand Corporation study on Tactical Aircraft for Limited War enumerated the following characteristics and capabilities which should be found in aircraft designed for counterinsurgency:

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[22]A. H. Peterson, G. C. Reinhardt, E. E. Conger, "Symposium on the Role of Airpower in Counterinsurgency and Unconventional Warfare: The Malayan Emergency," Memorandum RM-3651-PR (Santa Monica, California: The Rand Corporation, Jul 63), p. 57.

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Required Mission Capabilities	Vehicle Characteristics
Operate from remote, improvised bases.	Modest base-facility. Maintainability.
Deliver non-nuclear weapons. Minimize collateral damage.	Delivery accuracy. Carry large ordnance loads.
Achieve and maintain air superiority. Carry out armed reconnaissance. Conduct close support operations.	Extensive in-flight performance flexibility.
Rapid deployment to troubled area.	Long ferry range.

This study recognized the need to compromise in development of an aircraft and accept the fact that all of the capabilities and characteristics listed above would be difficult to obtain in a single aircraft.[23]

There are three approaches to the development of weapons and equipment for counterinsurgency. These approaches are included in the following comments: Air Commodore P. E. Warcup, C.B.E. (RAF), stated his position in a Rand symposium report.

> The services, being what they are, make equipment to fight various types of war, not one war. None of us, not even Americans, can afford specialized aircraft for each type of conflict. I think you will have to fight the war with the equipment you have for other types of war.[24]

Commander Turner F. Caldwell, Jr., USN, at the end of World War II, took a different position. He felt that, "the future night fighter, if we can

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[23] R. Schamberg, "Tactical Aircraft for Limited War," Memorandum RM-3545-PR (Santa Monica, California: The Rand Corporation, Mar 63), p. 6.

[24] A. H. Peterson, G. C. Reinhardt, E. E. Conger, op. cit., p. 82.

As a corollary to the preceding prediction, we see counterinsurgency operations becoming more offensive in nature. At the present time in Vietnam, this is more of a fact than a prophecy. Continuous operations, day and night, oriented on action rather than reaction are a present reality, with every indication pointing to further emphasis in this direction.

Air operations in counterinsurgency of the future will be increasingly diversified with greater emphasis on the use of aircraft for psychological warfare and in harassment roles. More and more emphasis will be placed on target selectivity in an attempt to obtain maximum results from the effort expended. Multiple mission sorties will be the rule, with secondary targets and missions assigned to each scheduled aircraft sortie. As equipment and weapons become more sophisticated, and hence more costly, the need for maximum utilization of each flying hour becomes a necessity.

Predictable tactics include increased use of illumination devices of all kinds with an ultimate objective of providing daytime environment for counterinsurgency forces on a 'round the clock basis. We can also foresee the employment of "hunter-killer" teams to a greater degree; teams consisting of flareships, fighter-bombers, reconnaissance and control aircraft, and armed helicopters, operating together in a coordinated effort directed toward finding, fixing, and destroying insurgent forces.

A fundamental responsibility of military forces is to provide our country with the most effective and efficient extension of its national objectives through military means when that means is necessary and called for. The use of air power at night in counterinsurgency has proven its value. In the future it will become a method of employment of air power

having major applications for counterinsurgency. The doctrine is evolving and will continue to evolve, to the benefit of those who recognize its promise.

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