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# PROJECT CHECO SOUTHEAST ASIA REPORT

## LOCAL BASE DEFENSE IN RVN

JANUARY 1969 - JUNE 1971

12570

CONTINUING REPORT

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**C**ontemporary  
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**E**xamination of  
**C**urrent  
**O**perations  
**REPORT**

**LOCAL BASE DEFENSE IN RVN**  
**JAN 69 - JUN 71**

**14 SEPTEMBER 1971**

**HQ PACAF**

**Directorate of Operations Analysis**  
**CHECO / CORONA HARVEST DIVISION**

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**Prepared by:**

Mr. John W. Dennison

Mr. Melvin F. Porter

**Project CHECO 7th AF, DOAC**

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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS PACIFIC AIR FORCES  
HICKAM AIR FORCE BASE, HAWAII 96853

19 OCT 1981

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SUBJECT: Downgrading of Project CHECO Report, "7AF Local Base Defense Operations, July 1965-December 1968 (U)"

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1. (U) A review has been made by appropriate personnel, this headquarters, to downgrade Project CHECO Report, 1 July 1969, "7AF Local Base Defense Operations, July 1965-December 1968 (U)," HQ PACAF/DOTEC, Secret-NOFORN.

2. (C) As a result of this review, it has been determined that this document can be downgraded to Confidential-NOFORN with a review-for-declassification date of 1 October 1987. Pages 55 and 56 contain comments which would be offensive to Thai military officials if disclosed; therefore, they must remain classified at the Confidential-NOFORN level. All other pages are now "For Official Use only (FOUO)." If pages 55 and 56 were deleted, however, this document can be downgraded to FOUO with a caveat on the bottom of the document's cover, as follows:

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*Jack P. Cross*  
JACK P. CROSS, Lt Col, USAF  
Executive Officer  
DCS Operations and Intelligence

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**PROJECT CHECO REPORTS**

The counterinsurgency and unconventional warfare environment of Southeast Asia has resulted in the employment of USAF airpower to meet a multitude of requirements. The varied applications of airpower have involved the full spectrum of USAF aerospace vehicles, support equipment, and manpower. As a result, there has been an accumulation of operational data and experiences that, as a priority, must be collected, documented, and analyzed as to current and future impact upon USAF policies, concepts, and doctrine.

Fortunately, the value of collecting and documenting our SEA experiences was recognized at an early date. In 1962, Hq USAF directed CINCPACAF to establish an activity that would be primarily responsive to Air Staff requirements and direction, and would provide timely and analytical studies of USAF combat operations in SEA.

Project CHECO, an acronym for Contemporary Historical Examination of Current Operations, was established to meet this Air Staff requirement. Managed by Hq PACAF, with elements at Hq 7AF and 7AF/13AF, Project CHECO provides a scholarly, "on-going" historical examination, documentation, and reporting on USAF policies, concepts, and doctrine in PACOM. This CHECO report is part of the overall documentation and examination which is being accomplished. It is an authentic source for an assessment of the effectiveness of USAF airpower in PACOM when used in proper context. The reader must view the study in relation to the events and circumstances at the time of its preparation--recognizing that it was prepared on a contemporary basis which restricted perspective and that the author's research was limited to records available within his local headquarters area.

A handwritten signature in black ink, appearing to read "Ernest C. Harbin, Jr.", written in a cursive style.

ERNEST C. HARBIN, JR., Major General, USAF  
Chief of Staff

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Project CHECO Report, "Local Base Defense in RVN,  
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MIKE DELEON, Colonel, USAF  
Chief, CHECO/CORONA HARVEST Division  
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  - (b) XP. . . . . 1
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  - (d) DREA. . . . . 1
  - (e) IN. . . . . 1
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    - 1. DOO. . . . . 1
    - 2. IN. . . . . 1
  - (b) 19AF(IN). . . . . 1
  - (c) USAFSOF(DO) . . . . . 1
- (3) WINGS
  - (a) 1SOW(DOI) . . . . . 1
  - (b) 23TFW(DOI) . . . . . 1
  - (c) 27TRW(DOI) . . . . . 1
  - (d) 33TFW(DOI) . . . . . 1
  - (e) 64TAW(DOI) . . . . . 1
  - (f) 67TRW(DOI) . . . . . 1
  - (g) 75TRW(DOI) . . . . . 1
  - (h) 316TAW(DOX) . . . . . 1
  - (i) 363TRW(DOI) . . . . . 1
  - (j) 464TFW(DOI) . . . . . 1
  - (k) 474TFW(DOI) . . . . . 1
  - (l) 479TFW(DOI) . . . . . 1
  - (m) 516TAW(DOX) . . . . . 1
  - (n) 4403TFW(DOI) . . . . . 1
  - (o) 58TAC FTR TNG WG. . . . . 1
  - (p) 354TFW(DOI) . . . . . 1
  - (q) 60MAWG(DOOXI) . . . . . 1
- (4) TAC CENTERS, SCHOOLS
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  - (b) USAFTFWC(DRA) . . . . . 1
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- (1) HEADQUARTERS
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  - (b) XPX . . . . . 1
  - (c) DM. . . . . 1
  - (d) IN. . . . . 1
  - (e) NR. . . . . 1
  - (f) HO. . . . . 1
- (2) AIR FORCES
  - (a) 2AF(INCS) . . . . . 1
  - (b) 8AF(DOA) . . . . . 2
  - (c) 15AF(INCE) . . . . . 1

### c. MAC

- (1) HEADQUARTERS
  - (a) DOI . . . . . 1
  - (b) DOO . . . . . 1
  - (c) CSEH. . . . . 1
  - (d) MACOA . . . . . 1
- (2) MAC SERVICES
  - (a) AWS(HO) . . . . . 1
  - (b) ARRS(XP) . . . . . 1
  - (c) ACGS(CGO) . . . . . 1

### d. ADC

- (1) HEADQUARTERS
  - (a) DO. . . . . 1
  - (b) DOT . . . . . 1
  - (c) XPC . . . . . 1
- (2) AIR DIVISIONS
  - (a) 25AD(DOI) . . . . . 1
  - (b) 23AD(DOI) . . . . . 1
  - (c) 20AD(DOI) . . . . . 1

### e. ATC

- (1) DOSPI . . . . . 1



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- (1) HEADQUARTERS
- (a) XOX . . . . . 1

g. AFSC

- (1) HEADQUARTERS
- (a) XRP . . . . . 1
- (b) XRLW. . . . . 1
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- (d) SDA . . . . . 1
- (e) CSH . . . . . 1
- (f) ASD(RWST) . . . . . 1
- (g) ESD(XR) . . . . . 1
- (h) RADC(DOTL). . . . . 1
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- (l) AFATL(DL) . . . . . 1

h. USAFSS

- (1) HEADQUARTERS
- (a) AFSCC(SUR). . . . . 2
- (2) SUBORDINATE UNITS
- (a) Eur Scty Rgn(OPD-P) . 1
- (b) 6940 Scty Wg(OOD) . . 1

i. AAC

- (1) HEADQUARTERS
- (a) ALDOC-A . . . . . 1

j. USAFSO

- (1) HEADQUARTERS
- (a) CSH . . . . . 1

k. PACAF

- (1) HEADQUARTERS
- (a) DP . . . . . 1
- (b) IN . . . . . 1
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- (e) DOAD . . . . . 6
- (f) DC . . . . . 1
- (g) DM . . . . . 1

(2) AIR FORCES

- (a) 5AF
- 1. CSH . . . . . 1
- 2. XP. . . . . 1
- 3. DO. . . . . 1
- (b) Det 8, ASD(DOASD). . 1
- (c) 7AF
- 1. DO. . . . . 1
- 2. IN. . . . . 1
- 3. XP. . . . . 1
- 4. DOCT. . . . . 1
- 5. DOAC. . . . . 2

- (d) T3AF
- 1. CSH . . . . . 1
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(3) AIR DIVISIONS

- (a) 313AD(DOI) . . . . . 1
- (b) 314AD(XOP) . . . . . 2
- (c) 327AD
- 1. IN. . . . . 1
- (d) 834AD(DO). . . . . 2



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- (4) WINGS
  - (a) 8TFW(DOEA) . . . . . 1
  - (b) 12TFW(DOIN). . . . . 1
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- (5) OTHER UNITS
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## 1. USAFE

- (1) HEADQUARTERS
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  - (d) XDC. . . . . 1

- (2) AIR FORCES
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  - (c) 17AF(IN) . . . . . 1

- (3) WINGS
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  - (b) 50TFW(DOA) . . . . . 1
  - (c) 20TFW(DOI) . . . . . 1
  - (d) 401TFW(DCOI) . . . . . 1
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## 4. SEPARATE OPERATING AGENCIES

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CHAPTER I  
LOCAL BASE DEFENSE

Introduction


A few days after General Lucius D. Clay took command of the Seventh Air Force on 1 September 1970, he asked the question: "What actions are being taken by Seventh Air Force Headquarters when an increased threat is estimated at 7AF bases?"<sup>1/</sup> In reply the 7AF Director of Security Police (IGS) outlined the actions to be taken in the Republic of Vietnam (RVN) to protect USAF installations from enemy attacks, and delineated the responsibilities required to protect those installations.<sup>2/</sup>

Jurisdiction

Among the many USAF installations in the RVN were several listed as critical to the success of the mission of the United States Air Force in SEA. The installations specified (not necessarily in order of priority) were:<sup>3/</sup>

- . Tan Son Nhut Airfield and the Hq 7AF complex.
- . Bien Hoa Air Base
- . Cam Ranh Air Base
- . Nha Trang Air Base
- . Da Nang Airfield
- . Binh Thuy Air Base
- . Pleiku Airport
- . LORAN (Long Range Aerial Navigation) Facility at Tan My



- 
- . Det 9, 619th TCS Control and Reporting Post (CRP) at Ban Me Thuot
  - . Det 11, 619th TCS CRP on Hon Tre Island (near Nha Trang)
  - . Phan Rang Air Base
  - . Phu Cat Air Base
  - . 620th TCS Control and Reporting Center (CRC) at Monkey Mountain (Da Nang)

USAF security forces, Free World Military Assistance Forces (FWMAF), and Republic of South Vietnam Armed Forces (RVNAF) shared the responsibility to protect these installations. The overall defense system of an installation encompassed an area extending beyond the maximum range of known stand-off weaponry possessed by enemy forces, while the perimeter fences of a facility separated external and internal responsibility for defense.<sup>4/</sup>

#### Intelligence

Estimates of the degree of any potential threat to a base came from intelligence gathered in-or-outside the base (with the reliability of the source and the probability of the occurrence taken into consideration). Known enemy activity within approximately a 20-mile radius was carefully monitored. Even climatical conditions favoring covert action, and the moods of the local populace served as indicators. With all elements of intelligence taken into consideration, base commanders took appropriate measures to ensure protection of their installations. The standoff or ground attack threat was assessed weekly and updated daily; concomitantly, the alert status of each facility was changed to meet the potential threat. Commanders could change the alert status from White, Grey, Yellow, up



[REDACTED]

through Red Option I (base under actual attack or attack was imminent) to Red Option II (external defenses were overrun or unable to cope with an attacking enemy force). (See Appendix B for Security Alert descriptions.) If the commander of a base considered resources inadequate to cope with a particular threat, he could request assistance from the Commander, 7AF.<sup>5/</sup>

#### Base Defense

Internal security remained the responsibility of the installation commander, although as stated, he could request outside aid if it became necessary. Internal security began with the perimeter fence and was divided into a three-zone--or three-ring--concept of deployment. The first zone or ring was the preventive perimeter, the first line of defense on the base itself. This perimeter consisted of fencing, elevated and hardened observation and gun positions, lighting, mines, and special tactical security support equipment (TSSE). The secondary defense zone, patrolled by an intermediate deployment of sentries between the outer perimeter and the operational areas, provided an increased detection capability plus forces to delay any further enemy penetration until reaction support arrived. Sentry dogs positioned in the secondary zone, along with Security Alert Teams (SATs), provided mobile response plus additional firepower when needed.<sup>6/</sup>

The third zone of defense, the close-in ring, deployed sentries around the borders of areas in which command, communications, or critical operational areas were located. The close-in forces regulated entry-and-exit



[REDACTED]

control under normal security conditions, guarded against sapper attacks or sabotage, and provided a backup for primary or secondary defenses forced to withdraw under direct attack. Normally, the main strength of the security forces would be along the perimeter and in secondary defense positions.<sup>7/</sup>

On small off-base sites, detachments, and operating locations, the site perimeter was the final line of resistance, and all posts, detection equipment, weaponry, and observation devices were positioned to detect enemy penetration attempts as far away as conditions permitted. Area denial was the prime concept of all security planning.<sup>8/</sup>

#### Manning the Defense

Active perimeter defenses were composed of bunkers, towers, walking posts, and guard posts that were manned by security police. Some of these posts were manned by one individual and some were dual manned, but together they represented the initial manned defense line. The posts were organized into sectors, usually geographically determined by such land features as roads, runways, disposition of aircraft, location of resources and facilities, and response capability of reaction.<sup>9/</sup>

One security alert team (SAT) was assigned to each sector. The SAT was usually a three-man security force equipped with an M-151 jeep or M-706 armored car mounted with an M-60 machine gun, an installed mobile radio, a portable radio, and a 40mm grenade launcher.\* The SAT was capable

\*The recommended basic arsenal for base defense. (See Appendix A.)



[REDACTED]

of responding to each perimeter post within moments, and reported the status of its sector to the Central Security Control (CSC) at least every 30 minutes. The SAT maintained a patrol in support of the posted sentries.

During periods of increased threat, the Quick Reaction Team (QRT) supported sentries and SATs. The number of QRTs was based upon the size of the installation, the local threat, and the support provided by U.S., RVNAF, and FWMAF. Normally, each installation would require two 6-man teams to provide heavy weapons fire in support of the security forces. Weapons assigned to the QRT included machine guns, recoilless rifles, and automatic grenade launchers. The QRTs were maintained in ready reserve status for dispatch by CSC, used as mobile patrols, or prepositioned for static defense at the discretion of the Chief of Security Police.

Supervision of the defense was controlled by the CSC. The CSC monitored the base defense and implemented changes in base alert as the threat increased or decreased. Direct lines of communication connected the CSC with the base control tower, base command post, crash fire station, the security force living areas and the Joint Defense Operating Center (JDOC). The JDOC provided centralized control of the installations' interior and exterior defense operations, and included representatives from the USAF and all military forces providing support within a belt of terrain surrounding the installation.<sup>10/</sup>

Before Tet 1968, sapper attacks up to company size were considered within the capability of the enemy. U.S., RVNAF, and FWMAF were positioned



[REDACTED]

to intercept and keep the enemy from reaching the installation perimeters; but if the enemy evaded the FWMAF and penetrated the base perimeter, the installation security forces responded to the attack by consolidating the defensive resources of the base. During this period, the close-in ring received the greatest emphasis with base perimeter defenses consisting of widely spaced towers, observation posts, some bunkers, and security alert team response.<sup>11/</sup>

The large land attacks during Tet 1968 on Tan Son Nhut Air Base and Bien Hoa Air Base revealed a need for the employment of light infantry tactics, new and heavier weapons, improved communication, and vehicles that would provide a degree of protection from hostile fire. Emphasis for base defense shifted from concentration of forces in the close-in ring to shoring up the outer defensive ring. The enemy, however, learned from the failures of the mass land attacks and changed tactics incorporating more standoff weapon attacks and sapper attacks. The result was that on a number of occasions during 1968 and 1969 sappers slipped past the perimeter defenses and caused damage to combat resources. Although security forces killed many of the sappers, the emphasis on the preventive perimeter developed an "egg shell" situation. The "egg shell" situation had obvious disadvantages for the defending force. Once the infiltrators had penetrated the perimeter and passed the first line of defense, the sappers had greater latitude of movement and evasion. Inside the perimeter, the sappers had the elements of confusion and darkness to benefit them. The sappers also attempted to get as close as possible to the perimeter wire and as quickly



[REDACTED]

quickly as possible into the interior of the base to reduce the effectiveness of air attack in support of the base defenders. To correct the situation, a balanced defense was strived for; one which permitted detection of the enemy as far from the perimeter defense as possible, with in-depth protection to the close-in ring that would detect a single individual penetrating the defense.<sup>12/</sup>



[REDACTED]

CHAPTER II  
STATE OF THE ART

Procedures for developing local base defense were published in a number of documents. PACAFM 207-25, Security Policy and Guidance for Guerrilla/Insurgency/Limited War Environments, 15 February 1971, outlined an in-depth internal physical security program for USAF installations and resources located in a sustained limited war, insurgency, or guerrilla environment.<sup>13/</sup> Other documents supplemented the manual, describing bunker construction, mine laying, munitions, lighting, defoliation, towers, alarms, security alert conditions, and fences. Some of the more instructive documents discussed base defense from the point of view of the enemy. Combat after action reports gave observations of the defenders. These documents concluded:<sup>14/</sup>

- a. Trained sappers had little difficulty entering allied installations during darkness through normal perimeter wire barriers such as standard three-row, nonlaced, triple concertina, double apron, or tanglefoot.
- b. Wire barriers impeded the progress of the sapper in that the wire required considerable time to breach.
- c. Wire barriers and trip flares were inadequate in quantity and placement.
- d. Barbed tape increased the probability of detection in that it had to be cut or a hole dug under it.
- e. Foliage, together with insufficient or no lighting on perimeter wire, seriously reduced the probability of sapper detection.
- f. Sentry dogs were not a highly reliable means of sapper detection.



[REDACTED]

g. The inattentiveness of perimeter guards often enabled the undetected penetration of base perimeters by sappers.

h. Perimeter defenses on allied installations needed upgrading to prevent sapper infiltrations.

From the above conclusions, five recommendations were made. The first recommendation was that all foliage be cleared from wire barriers. The next recommendation was that concertina wire barriers be modified to have at least five rows of triple concertina, and rolls of wire be interlaced to provide a more dense barrier. Trip flares and hand grenades were to be placed in a random pattern and in greater density. The use of barbed tape would be increased. The third recommendation was that adequate lighting be installed to facilitate detection of sappers during the hours of darkness. Fourth, it was recommended that sentry dogs not be relied upon as the only means to detect sappers. Finally, it was recommended that the training and motivation of guards be improved.<sup>15/</sup>

#### Foliage

With all of the elaborate preparations for base defense available to U.S. defenders, many of the defenses could be neutralized by the fast growing and dense foliage found in the Republic of South Vietnam. Uncontrolled foliage outside the perimeter fence and in the perimeter was frequently reported in Combat After Action Reports as permitting the sapper to breach the perimeter defenses. Vegetation allowed cover and concealment for ingress and egress. Cover and concealment permitted time to work. Under interrogation, a sapper explained that all of his reconnaissance missions were conducted at night.<sup>16/</sup> As a VC sapper he had penetrated




[REDACTED]

perimeter wire defenses 25 times in two years. The penetration would take at least three hours since darkness necessitated moving very slowly in order to feel for trip wires and to keep from being observed by guards. Traversing a mine field was time-consuming but certainly not an impossible task. Actually mines, at times, worked to the advantage of the sapper because the knowledge that mines had been laid in the perimeter tended to set up a complacent attitude for the guard. The guard's dependence upon the mine to signal the intrusion of a sapper dulled his response to sapper movement.

The minefield itself acted as a deterrent to foliage control. Methods of controlling vegetation in a minefield were limited by several constraints and consequently vegetation was permitted to grow. Herbicide spraying during the rainy season was often negated by the intermittent rains that washed the spray from the foliage before it could have any significant effect. In addition, the use of chemical agents quite often was discouraged by local officials because the potential effects on nearby crops. The spreading of JP-4 or oil also required permission from Vietnamese officials, as well as necessitating excessive amounts of these products if they were to be effective. One method of vegetation control was burning; however, while burning the vegetation had the advantage of not harming local crops, it conversely detonated the mines. Foliage was ultimately left to grow and to benefit the sapper.<sup>17/</sup>

[REDACTED]





## Minefields

Minefields alone proved not to be a secure defense. Extensive training taught the sapper how to locate and neutralize a mine (most would qualify as EOD experts). He was instructed to take advantage of a minefield as a route for ingress into a base because of guard complacency, and as a means to check pursuit when withdrawing from a base. He was usually more familiar with the mine location than the defenders. Mines were seldom inspected or relocated by base personnel, most notably by the Vietnamese. Maps and layouts of old minefields were on occasion misplaced or lost, deterring further investigation of the mined areas. At Tan Son Nhut Airfield, as well as at other bases, many of the mines on the perimeter had been laid by the French up to 20 years ago and their locations, other than their general areas, were unknown.<sup>18/</sup>

Mines, especially Claymores, were often set in cement (to prevent sappers from turning the mine on the defenders) and backed with sand bags in order to get maximum frontal blast effect.<sup>19/</sup> While this contributed to the explosive efficiency of the mines, it also effectively locked them into static positioning. In discussing mines at USAF facilities, 7AF security police reported:<sup>20/</sup>

*In some places, there are no mines, trip flares, or noise-making devices installed. However, almost as worthless as a non-existent device is one, or a series, which is not periodically surveyed and, when necessary, repositioned.*



[REDACTED]

One of the most successful defenses against a sapper attack occurred at Phan Rang AB on 26 January 1969 in an area where there were no mines. Bunkers had been moved further away from the perimeter, and bulldozers had graded the area to improve the field of fire. Foliage was controlled. Nonetheless, sappers penetrated the base, destroying two aircraft and damaging 15 more, but the base defenders succeeded in killing 14 sappers<sup>21/</sup> on the installation, and probably two more, judging from heavy blood trails. (Sixteen sappers would constitute a quite large sapper squad.)

#### Lights and Illumination

One key to the effective defense against such attacks was illumination. Darkness was the ally of the sapper; he relied on confusion among the defenders and their inability to distinguish friend from foe in the dark to protect him.<sup>22/</sup> Although most bases had adequate perimeter lighting systems, there were shortcomings. Often, during rainstorms, the lights exploded. The responsibility for upkeep of these systems was vested in the VNAF, who often appeared lackadaisical in installing new bulbs. In most areas, more trip flares could be employed, as well as on-call mortar illumination during hours of darkness. At irregular intervals, random illumination assisted detection of sappers, while continuous illumination benefited defending forces during a known penetration attempt.<sup>23/</sup>

#### Fencing and Wire

Experienced sappers had little trouble breaching any type of fence used by allied forces except barbed tape which he had to cut or tunneled under. The sapper could move with relative ease in darkness through




[REDACTED]

standard nonlaced concertina, double apron, and tanglefoot. To show the ease with which a wire obstacle could be penetrated, a captured sapper demonstrated techniques employed by the North Vietnamese Army (NVA) and Viet Cong (VC). He wore only shorts and carried in his mouth several paper clips and two pieces of wire cut from a coat hanger and fashioned into hooks. Moving primarily in a crouch, the sapper slithered along the ground feet first or hopped carefully over wires. He circumvented a trip flare easily by inserting a paper clip in the safety pin hole to prevent the handle from releasing. The sapper moved through concertina wire by pulling the wire apart until he made an opening just large enough to wriggle through, then secured this by the hooks made from the coat hanger. After passing through the opening, he released the concertina wire and returned it to its original position. He then put the hooks back in his mouth and continued to the next wire obstacle. The sapper left no trace of his path and used natural vegetation to avoid silhouetting. It took the infiltrator approximately 20 minutes to move through three barriers of triple concertina and two barriers of tanglefoot.<sup>24/</sup>

To improve defenses made of wire, a counter-sapper study made several pertinent recommendations which included the following:<sup>25/</sup>

- . Concertina fences sufficient to completely ring the installation in depth, with a minimum of 30 meters between fences, and 40 to 50 meters between bunkers and other defensive positions, and the innermost row of wire.
- . Liberally employed warning devices in the wire, such as tin cans containing stones to produce sound when disturbed.



- 
- Widely used trip flares and trip grenades, placed at varying height and randomly spaced.
  - Raked sand strips, specifically arranged and noted trees or bushes, and other indicators, all checked repeatedly to reveal penetration or reconnaissance attempts.

### Bunkers

During the initial phase of a sapper attack a properly constructed bunker afforded the best life insurance; but, it was more than merely a secure area, it also was an offensive position.<sup>26/</sup> From such a strongpoint, interlocking fields of fire ideally should have responded to sapper penetrations with low, grazing fire. Unfortunately in Vietnam, too many of the French and Vietnamese-built bunkers were built too close to the perimeter wire, too high to effect a grazing fire, and their fields of fire were not clear, level, or interlocking.<sup>27/</sup> Bunkers should have been about 24 inches above the ground. At Tan Son Nhut Airfield, near Saigon, the Vietnamese incorporated into their defense system bunkers originally constructed by the French. These had small firing ports that greatly reduced the fields of fire, and in the instances where the Vietnamese placed their firing positions on the top of the French-type pillbox, the grazing fire tactic was lost.<sup>28/</sup>

A study made by the 7AF IGS showed that bunkers should not be spread out in a single line around the perimeter but constructed in staggered depth to provide mutual fire support. Also, the positions were constructed so as not to be defensible from the rear in the event they were captured



[REDACTED]

by the enemy.<sup>29/</sup> A "η" or wedge-shaped bunker facing outward denied the enemy protection on egress and could not be used by him as a strongpoint.<sup>30/</sup>

#### Revetments

Reinforced revetments for aircraft substantially reduced the damage inflicted by mortar and rocket attacks. In a revetment without a roof, a direct hit destroyed or heavily damaged the aircraft. Those with a roof, called "Wonder Shelters," (basically a steel-reinforced concrete arch) took direct hits from up to 122mm rockets and sustained little or no damage to the aircraft in the shelter.

Revetting reduced damage to Petroleum, Oil, and Lubricants (POL) areas also. POL tanks received direct hits at Da Nang on 27 April 1971 and at Cam Ranh Bay on 24 May 1971 causing extensive damage to the struck tanks but nearby tanks separated by revetments were not destroyed. Fire fighting personnel at the bases worked to reduce heat and potential explosions and were able to confine the damage to the tanks receiving the direct hits on both occasions.<sup>31/</sup>

#### Dogs

Sentry dogs performed outstanding work in South Vietnam, and some were killed in detecting and deterring sapper attacks. On 13 April 1966, Tan Son Nhut came under what was intended to be a combined infiltration and attack by fire by the Viet Cong. A Project CHECO report describing that attack said:



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*The first indication of possible enemy actions appeared at approximately 0026 hours, when USAF sentry dog teams working in zones along the west and southwest fenceline of the base alerted, received small arms fire, and returned fire. It was later surmised that this action diverted an attempted Viet Cong infiltration.*

The dog initially alerting the sentries was killed and his handler wounded, <sup>32/</sup> but more than twenty sapper/infiltrators were killed in the action.

Sentry dogs, however, were not an infallible means of sapper infiltration for various reasons. For one, the dog was only as good as his handler. The dogs needed training and work to be proficient; most received this, some did not. <sup>33/</sup> In addition the sapper had means to defend against the dog. He coated his body with substances to disguise the human smell. <sup>34/</sup> He took every advantage of dense foliage and wind direction. The foliage served to diffuse and reduce the human scent, and infiltrating downwind carried the scent away from the dog. <sup>35/</sup>

#### Personnel

Perimeter wire and mines were not considered difficult obstacles to surmount by the sapper and, according to a captured prisoner, many of the guards were considered "generally inattentive, lazy and careless." <sup>36/</sup> Tests to record guard response to stimuli, and fatigue studies, were conducted at every base. <sup>37/</sup>

To test guard response, three light sources were placed approximately 50 to 75 feet in front and on each side of the surveillance area for which the guard was responsible. The lights were situated so that all three could



[REDACTED]

not be seen simultaneously from any point in the bunker. The positioning of the lights insured that the guard would perform his normal duties without compromising the security of his area. At varied intervals, one of the three lights was randomly turned on. When the guard saw the light, he responded by calling out "light" and the reaction time was measured by a stop watch. The results of the study showed that there was a noticeable decrease in alertness beginning on the fourth hour and peaking at the sixth hour of an eight-hour shift. Another important observation was noted: <sup>38/</sup>

*One would assume that being in an active combat zone these sentries should be well motivated by fear of survival to remain alert. Also knowing that their alertness was being measured during this experiment, should act as an additional motive for maximum alertness. Despite the double motivation, 10 of the 45 sentries tested were found to be non-responsive and several were non-responsive multiple times. A sentry was judged to be non-responsive when he had not responded to the light after sixty seconds. At this time all three lights were then turned on to insure he was not busy looking at another area. In most cases, the experimenter would have to yell at the sentry to get him to respond, in addition to lighting all three lights.*

The fatigue study evaluated the length of shift, loneliness, morale, living conditions, environmental stress, and nutrition. Interpretation of the data was to be made at School of Aerospace Medicine at Brooks Air Force Medical Center, but a preliminary report presented some initial impressions. The length of shift was found to be fatiguing; but more than the length of shift was the period during which the shift took place, the hours of darkness, from 2200 to 0600. There was a decline in alertness



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after four to five hours and a return to greater effectiveness as the end of the shift neared. Even in two-man posts, there was a decline in effectiveness after four to five hours with a similar return to alertness. Loneliness produced psychological fatigue. Psychological fatigue was defined as a state of mind resulting from continuous mental activity or work resulting in a reduction in the effectiveness and interest of the individual. In the case of the sentry, where mental activity was his main activity for the entire shift, the sentry became introspective and so involved in his thoughts that he became unaware of his immediate environment. Consequently his effectiveness and usefulness were compromised. There was less deterioration where a sentry had activity or was placed in a two-man post. The monotony and routineness of guard duty had their effects upon the morale of the guard, although morale was found to be fairly high. Living conditions at most security police barracks were found to be crowded, noisy, lacking ventilation, and generally not conducive to restful sleep. Another factor in the fatigue study was environmental stress. Generators, spotlights, and humming sounds developed environmental stress contributing to psychological fatigue and, as such, were basically considered detrimental to the alertness of the person manning the adjacent post. The last item in the fatigue study was nutrition. An earlier study suggested the possibility that the sentries' poor eating habits lead to a hypoglycemic (low blood sugar) state which contributed to fatigue. Volunteers were selected from the night shift for two blood sugar samples. The first sample was made immediately after the guards were posted and the second sample was obtained six hours later to determine if there was a significant decrease or if a hypoglycemic state

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resulted. The tests had not been previous]y announced to insure that normal eating habits would be observed. The results of the investigation showed that none of the subjects' blood levels fell below the normal levels for their age group. In fact more subjects showed increased rather than decreased levels. The subjects whose levels increased had eaten C-rations and most of them had eaten candy brought to the post with them. <sup>39/</sup>

#### Tactical Security Support Equipment

Tactical security support equipment (TSSE) was a term applied to various types of intrusion detection devices such as seismic sensors, geomagnetic devices, ferrous metal detectors, infrared sensors, starlight scopes, and various other types of equipment which could detect movement of enemy personnel. Some units required permanent installation while others were portable. The devices were for the purpose of increasing the detection abilities of posted sentries, rather than as replacements for security forces themselves. Generally, their use in close proximity to relatively static, heavily defended perimeter guard systems was not recommended, since a heavy assault would be required to breach such an area and by its very nature, would announce itself. The TSSE devices found their best application in areas where small-scale infiltration was the most likely enemy tactic, or where normal coverage was by patrol and intermittent observation. Project Safe Look was a TSSE program designed to detect infiltration of personnel and equipment penetrating perimeters in Southeast Asia. <sup>40/</sup>



[REDACTED]

Project Safe Look

Southeast Asia Operational Requirement (SEAOR) 22-FY-66, "Intrusion Detection Equipment," November 1965, established a requirement for acquisition and installation of surveillance and detection equipment at air bases in the Republic of Vietnam, Thailand and Korea. The equipment was to be specifically designed to detect infiltration of personnel and equipment around base perimeters and to provide timely alarm for USAF security police quick reaction teams to engage infiltrators some distance away from critical and sensitive USAF resources. The SEAOR set in motion the Tactical Security Support Equipment (TSSE) program which was designated Project Safe Look.<sup>41/</sup>

Tests of electronic and electromechanical sensors to enhance air base perimeter defenses were conducted by Ground Electronics and Engineering Installation Agency (GEEIA) from 1 September 1966 through 11 August 1967. Equipment evaluated in the tests included the Multipurpose Concealed Intrusion Detection sensor (MCID, Model T-14), the Radar Air Base Intrusion Detection System (RAIDS-1), and the Balanced Pressure (Detection) System (BPS, Model T-1).

The MCID employed a loop of wire to sense disturbances in the magnetic field of the earth due to the moving of ferrous metal in the field. The loop was buried in the ground at a depth of two to three feet and covered a path three to five feet wide and approximately 100 meters long. The loop was connected to an amplifier. The amplifier was buried and converted alarm signals to a transmitter. The BPS consisted of a



[REDACTED]

detector unit containing electronic circuitry and batteries, two liquid filled hoses having a length of approximately 100 meters, and a system test module. The detection unit and system test modules were connected at the opposite ends of the two hoses and joined by a connecting cable. The modules and hoses were buried two to three feet and were five feet apart. The MCID and BPS subsystems were installed in lines to complement each other and to verify an intrusion. <sup>42/</sup>

A test of the equipment under field conditions was scheduled to take place at Phu Cat AB, Republic of Vietnam between October and December 1969. <sup>43/</sup>

Several hardware developments occurred which were added to the Perimeter Detection and Surveillance Subsystem to be installed at Phu Cat. These additions included the AN/GSQ-113 radio data set, the AN/PPS-12 hand held tactical radar, and the AN/PPS-5 radar set that was an improved RAIDS-1. The AN/PPS-5 was a small, all-weather Doppler moving target indicator radar. Moving targets were detected and identified in the presence of ground clutter through the use of range-gated filters. The radar was designed to detect personnel out to a range of 5000 meters but at Phu Cat AB it was used to monitor areas only out to about 2400 meters.

The AN/GSQ-113 was a transmitter that was compatible to the MCID and BPS. The AN/GSQ-113 was comprised of the receiver unit and up to ten transmitters. The receiver had the capability to display 50 sensor alarm, 50 sensor malfunctions, 10 transmitter self-tests, and electronic countermeasures (ECM) alert indication in case of an attempt to jam the



[REDACTED]

transmitter signals. Every 15 minutes each transmitter performed a self-test which determined if any sensor had a malfunction.

The AN/PPS-12 was a short-range moving target indicator radar. The radar set provided an audio indication of a Doppler shift caused by moving target activity. The maximum range at which small moving targets could be acquired was 1500 meters, traveling at a speed from two feet per second to 45 miles per hour. The AN/PPS-12 radars were used as gap fillers and to track possible targets that were indicated by BPS/MCID alarms and tracks acquired by the AN/PPS-5.<sup>44/</sup>

The perimeter detection and surveillance subsystem (PDSS) was deployed to the Idaho Sector of Phu Cat Air Base in the summer of 1969. Subsystem installation and checkout was accomplished by the GEEIA with support from base personnel. Test activities were initiated in October 1969. The tests consisted of sensitivity and countermeasures exercises, radar masking tests, false alarm tests, and two-phased program of simulated enemy intrusion missions. During Phase I missions, the PDSS was operated without use of radars. In Phase II missions, the complete PDSS was employed.<sup>45/</sup> The test program was completed in December 1969.

In evaluating the PDSS, Seventh Air Force found that the equipment was unsatisfactory for general operation under its present mode. Limitations included excessive manpower being required to maintain and protect the buried sensors. The equipment did demonstrate a high probability of detecting and tracking intruders when weather conditions permitted; i.e.,

[REDACTED]



[REDACTED]

no rain and light winds, but deficiencies of the equipment precluded replacing sentries with the PDSS. Seventh Air Force recommended that the PDSS equipment be removed from Phu Cat, the equipment be re-engineered and tested in the United States before the PDSS was installed at other SEA installations, and PDSS programmed installations at other SEA bases be cancelled until the equipment had been improved.<sup>46/</sup> PACAF concurred with Seventh Air Force as follows:<sup>47/</sup>

*Although the PDSS as evaluated is not considered suitable for deployment to PACAF Air Bases because of technical limitations and non-standard base situations/needs: subsystem components and/or partial systems part deficiencies corrected could be used to enhance air base defense, therefore, PACAF recommends improvements, further research and development and testing be continued in the CONUS.*

In 1971 extensive development and testing improved the PDSS equipment, especially in the maintenance areas;<sup>48/</sup> but in the meantime PACAF desired constraints be exercised on the installation of the PDSS in SEA due to the questionable life expectancy of many Pacific air bases.<sup>49/</sup>





## CHAPTER III

### THE THREAT

The USAF had to meet a changing threat against enemy attacks on United States installations and the enemy continued his versatility in meeting new obstacles and changing tactics. Between 1 January 1965 and 30 January 1968, a total of 57 attacks were made on USAF installations, 47 using standoff weapons.<sup>50/</sup> In January 1968, the enemy attempted major land attacks against Tan Son Nhut Airfield and Bien Hoa Air Base. The major attacks against Tan Son Nhut and Bien Hoa, during Tet 1968, were a tactical failure but a propaganda success for the enemy. Following the Tet attacks, the enemy returned to standoff weapon and sapper attacks. The frequency of attacks increased to 823 between 31 January 1968 and 8 June 1969. The majority of attacks between June 1969 and June 1971 were by stand-off weapons and sappers.<sup>51/</sup>

#### Standoff Weapons Attack

The standoff weapons attacks provided the enemy with the greatest element of surprise and the possibility of the greatest payoff for expenditures incurred. Excluding attacks by small arms fire, standoff weapons attacks exceeded any other method of enemy attack.\* The first major standoff attack in South Vietnam occurred on 27 February 1967, when

\*A standoff weapon was defined as any weapon capable of delivering a high explosive projectile to a target from a range in excess of one kilometer regardless of trajectory.



[REDACTED]

Da Nang Air Base was hit by 66 rounds of Soviet 140mm rockets. Da Nang Air Base continued to receive the largest number of attacks, but every USAF installation in South Vietnam experienced at least one standoff attack during the period of this report. <sup>52/</sup>

Since the introduction of the 140mm rocket in 1967, the enemy conducted attacks with light mortars, 107mm rockets, 122mm rockets, and 82mm mortars. (See chart on the following page for enemy weaponry and effective range.) The 122mm rockets permitted the enemy to fire from a maximum effective distance of 11,000 meters. Using darkness, inclement weather, and the lunar cycle, the enemy took advantage of minimal detection for optimal surprise. Most rocket attacks occurred between 2300 and 0300 hours. Some rocket attacks occurred during daylight hours, but these attacks were often delayed-fuzed launches primarily for harassment consisting of one or a few rounds. <sup>53/</sup>

Reconnaissance of the target and positions for launch sites were made in advance. On the night of the attack, the enemy force moved into predesignated launch sites where launch positions, aiming markers, direction guides, and target stakes were emplaced. The use of mud ramps or crossed sticks allowed for swift preparation of the weapon, although sacrificing much accuracy. The line of fire was frequently the long axis of the airfield to take advantage of the deflection error and the relatively large range dispersion of the missile. Launch sites were usually near a trail to facilitate withdrawal. <sup>54/</sup>





Standoff attacks seldom lasted more than 20 minutes. Fire for effect commenced with the first round and although rockets could be fired in volleys, in many instances only one volley was fired. The number of rounds fired usually totaled under a dozen. The largest number of rockets fired at a base during the period of this report was 86 rounds of 82mm aimed at Phan Rang on 25 February 1969. Usually the more rounds fired against an installation the greater the damage but one or two well-placed rounds proved very effective in causing extensive damage.

Again during the period 1 July 1969 to July 1971 the number of personnel casualties resulted from an attack were seldom large; four persons were killed in two instances. The largest number of USAF wounded was 28 at Da Nang on 22 August 1969. <sup>55/</sup>

#### ENEMY WEAPONRY

<u>Type</u>	<u>Max Eff Range</u>
Soviet SKS Carbine 7.62mm	400 met
Soviet AK-47 Assault Rifle	400 met
RPD Light Machinegun 7.62mm	800 met
RPG-2 Antitank Grenade Launcher	150-180 met
RPG-7 Antitank Grenade Launcher	500 met
57mm Recoilless Rifle	4375 met horiz
75mm Recoilless Rifle	6675 met horiz
60mm Mortar	1790 met (he)
82mm Mortar	3040 met horiz
120mm Mortar	5700 met
107mm Rocket	8300 met
122mm Rocket	10,973 met
140mm Rocket	10,607 met
B-30 Rocket w/122mm rocket motor	8000 est

Source: Study, Air Base Defense, An in-depth study of Tan Son Nhut prepared by Major M. F. Allington, Air Base Defense Advisor, AFAT-5, 1 June 1971.





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Standoff Attack at Nha Trang

At 1621 hours on 6 April 1970, Nha Trang AB received 11 rounds of 107mm rockets. Intelligence data beginning on 1 April 1970 indicated an enemy rocket attack some time between 6 April and 12 April with a broad scale attack likely on 7 April. Intelligence data buildup began on 1 April, when Camp McDermott, U.S. Army adjacent to Nha Trang AB, received five rounds of 82mm mortar fire impacting on the base and five rounds impacting outside the perimeter. On 2 April 1970, a report was received that one battalion of VC forces was moving into the Nha Trang area for the purpose of stepping up attacks on friendly units and installations. The stated purposes of the VC movement were to attack installations with rockets and mortars, to kidnap and assassinate key Vietnamese personnel and to engage friendly forces in large-scale operations. Enemy attacks indicated increased emphasis on POL destruction. To meet this threat, SAT coverage for the Nha Trang AB POL area was implemented even though the POL area was the responsibility of the VNAF.<sup>56/</sup>

A national police sweep of a hamlet adjacent to Nha Trang AB resulted in the detention of two suspected VC, two suspected VC sympathizers, two ARVN deserters, and one person with falsified identification papers. At 0105 on 6 April 1970, 35 mortar rounds and three B-40 rockets were fired at Popular Forces in the area of Nha Trang AB. Nha Trang AB had been in Security Alert Condition (SACON) Grey since the enemy-initiated attack on 1 April 1970. At 1621 on 6 April 1970, the primary SAT leader reported



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that two explosions were received at Camp McDermott. SACON Red #1 was implemented at 1622 and all security posts were completely manned and security alert teams were positioned at 1635 hours. At 1640 hours, additional rounds were reported launched from a southerly direction. Launch sighting could not be obtained because of the low cloud coverage on the mountain slopes. Two volleys came in this attack. The first volley consisted of two 107mm rockets that landed in a marsh adjacent to the perimeter fence of Camp McDermott. No damage resulted, but one U.S. Army enlisted man was seriously wounded by shrapnel.

The second volley consisted of nine rounds of 107mm rockets. One rocket impacted on the southwest side of the easternmost of three 10,000 barrel POL tanks containing JP-4 fuel. The tank immediately caught fire and burned for five hours, becoming a total loss. The fire spread to the center fuel tank but was contained. One rocket impacted in the Trans Asia (Base Power) area and created moderate shrapnel damage to one diesel tank, causing the tank to rupture with the resulting loss of 3,000 gallons of diesel fuel. One rocket impacted on the VNAF side of Nha Trang on the parking apron in the vicinity of the VNAF Base Operations Building. This rocket caused no personnel injury and only minor damage to the parking apron. One rocket impacted in the 8th Field Hospital area on the VNAF side on Nha Trang. It caused no damage, but one U.S. Army enlisted member received numerous shrapnel wounds. One rocket impacted off base killing one and wounding four Vietnamese civilians. Another round landed outside the Special Forces Compound but caused no damage and no casualties.

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Wooden bipods for launching rockets and platforms for carrying rockets found near Phu Cat AB, RVN following a standoff rocket attack on 2 February 1970.

FIGURE 1

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**UNCLASSIFIED**



Communications Building #1605, Da Nang AB, RVN was destroyed by a delayed action fused rocket on 8 April 1970.

FIGURE 2

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Three rounds impacted in a marsh without consequence. No aircraft were damaged in the attack.<sup>57/</sup> The standoff rocket attack was significant in the intelligence buildup, and in the few casualties; nonetheless the enemy successfully destroyed much valuable POL.<sup>58/</sup>

#### Standoff Attack at Phu Cat

At 0637 on 2 February 1970, Phu Cat AB received ten rounds of 122mm Soviet rockets that killed one USAF, wounded 15 USAF and wounded four U.S. Army personnel. The attack caused minor damage to two buildings. No aircraft were hit. Aside from the time of the attack, which was not in the usual 2300 to 0300 time frame, the attack was the first indication that 122mm Soviet rockets were being employed in Binh Dinh Province.

Republic of Korea (ROK) crater analysis personnel established a probable launch site, and a company of ROK infantry set out to the area with gunship support. The unit discovered the actual launch site and sighted six NVA soldiers, killing one and capturing one AK-47 rifle.<sup>59/</sup>

#### The Sapper Attack

The failure of the Tet 1968 mass land assaults against USAF installations prompted the enemy to abandon large frontal attacks in preference to standoff and sapper attacks. The battalion and regiment sized confrontations proved costly in enemy casualties, 1385 killed at Tan Son Nhut Airfield and 1145 killed at Bien Hoa Air Base. In addition to the loss of manpower, the enemy learned that USAF bases were well



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defended internally by U.S. Security Forces and VNAF Air Defense forces, and well supported externally by friendly units. <sup>60/</sup>

The sapper attack became the logical alternative. Whereas the mass assault involved a large force numbering in the hundreds, the sapper force was small, sometimes as few as three or four highly trained individuals. The sapper team could move relatively undetected while the mass attack force was observed quickly and soon vulnerable to counterfire. The sapper was the typical guerrilla. He planned the attack carefully, executed it swiftly and unexpectedly, and left. The objectives were simple: Penetrate the defenses of the installation; inflict as many casualties as possible; destroy equipment and bunker complexes within the perimeter as well as reaching and destroying combat resources; and withdraw. The sapper did not attempt to seize and hold the installation. For this reason, the sapper attack involved few personnel, allowing for more attacks, each potentially damaging to USAF bases, and at little cost to the enemy. <sup>61/</sup>

Under some conditions, the sapper might try to hold a position or a segment of the perimeter for several hours, the object being to inflict heavy casualties on the defending force. If the defending force could not obtain reinforcements or mount a counterattack, the sappers might seize and defend an advantageous position. The tactic was more likely to be used when they had already accomplished their main objective. Whenever sappers seized a position, they would try to hold it until defensive reinforcements arrived, they were low on ammunition, dawn approached, or until the tactical



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AN AK-47 and four magazines found on a sweep of the area after a standoff rocked attack at Phu Cat AB, RVN.

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situation changed to a disadvantage to them. The tendency for the sapper to hold a position was more favorable at fire support bases and small sites manned by ARVN, and at small bases where air support, heavy weapons, and nearby friendly forces could not be quickly brought to play against the attackers. The elements of surprise and versatility favored the enemy using this tactic.<sup>62/</sup>

Sapper attacks followed a general pattern. An enemy unit was divided into small groups. Each group was divided into teams, consisting of about four men. An objective was selected and a careful reconnaissance of the area was conducted. Weaknesses in the perimeter were probed and, in many cases, the most difficult route of approach was selected for penetration. Experience had taught the intruders that the most difficult route presented the greatest chance of success in breaching the defenses. By taking the most difficult route, the sapper took advantage of the human tendency to dismiss from consideration anything that was "clearly impossible." In penetration of a perimeter, the "impossible" presented no more difficulty than more accessible routes, except for the time to negotiate, and in most cases offered the best opportunity for success because the route was between listening posts. The tactic did require the ability to breach or penetrate the perimeter wire without being detected, but the sapper had raised this ability to a fine art. Former sappers have demonstrated their expertise, and although they were painstakingly slow, they tripped no alarms, rattled no wires, and got through undetected.<sup>63/</sup>



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Tall grass and dense vegetation assisted the sapper to penetrate the defenses. Besides affording protection while conducting surveillance and reconnoitering the base, sappers would move into deeply vegetated areas adjacent to the base the day before the assault.<sup>64/</sup> The night of the assault, the sapper would methodically approach the selected route of penetration utilizing ground contours and vegetation. The sappers also took full advantage of periods of low moon illumination, cloud cover, and inclement weather.<sup>65/</sup>

The sapper was also capable of quick penetration. This tactic required the use of bamboo poles, mats, and explosives, and was usually executed under cover of a standoff attack. The incoming rounds distracted the defending forces and drove the guards into bunkers. Once the guards were under cover in bunkers, the sapper attack began. Incoming fire ceased or shifted to another area on the base. The sappers would rush and breach the fence, simulating the continuation of incoming fire with rocket propelled grenades (RPGs), grenades and explosive charges. Once inside the perimeter, the sapper teams proceeded directly to predesignated targets. The teams moved on the double without consideration for personal safety. Other members of the unit maintained the illusions of incoming rounds with RPGs and explosives and on some occasions, 60mm mortar. The covering fire tended to keep the defending personnel, even if they had become aware of the real situation, inside the bunkers. In addition, the sappers caused casualties among the defenders by firing directly on the bunkers with RPGs.<sup>66/</sup>



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Hole cut in perimeter fence approximately 50 meters east of tower #16, at Pleiku Airport, RVN on 17 March 1971 by enemy sappers.

**FIGURE 4**

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When the mission of destruction was complete, each sapper team moved rapidly to the planned point of withdrawal. While enroute, any remaining explosives were expended on bunkers or other targets not previously destroyed. The portion of the unit which had remained outside the base for fire support maintained the pressure of fire until the sapper teams had withdrawn.

The plan of attack almost invariably called for an assault from more than one direction. The duplication of effort, together with covering mortar fire, was intended to split the defenders, create confusion, and insure a successful operation even if one of the units was stopped. Generally there were two main exit points, one on each side of the primary objective; and, as the sappers withdrew, they made every attempt to carry out their dead and wounded.<sup>67/</sup>

#### Sapper Reconnaissance

An example of a sapper/reconnaissance probe occurred at Phan Rang Air Base on 11 February 1970.<sup>68/</sup> Local intelligence sources had indicated an extremely low level of enemy activity, but at 0005 hours on 11 February, a sentry posted in a bunker reported sighting two individuals near the fenceline. After he called in the alert, the sector Security Alert Team (SAT), the flight commander, and the sentry dog flight chief were dispatched to the area to search it. The area was illuminated and a fenceline sweep performed by the sentry dog units, without any sightings, so the SAT forces withdrew after the flight commander directed increased vigilance along the perimeter fence.



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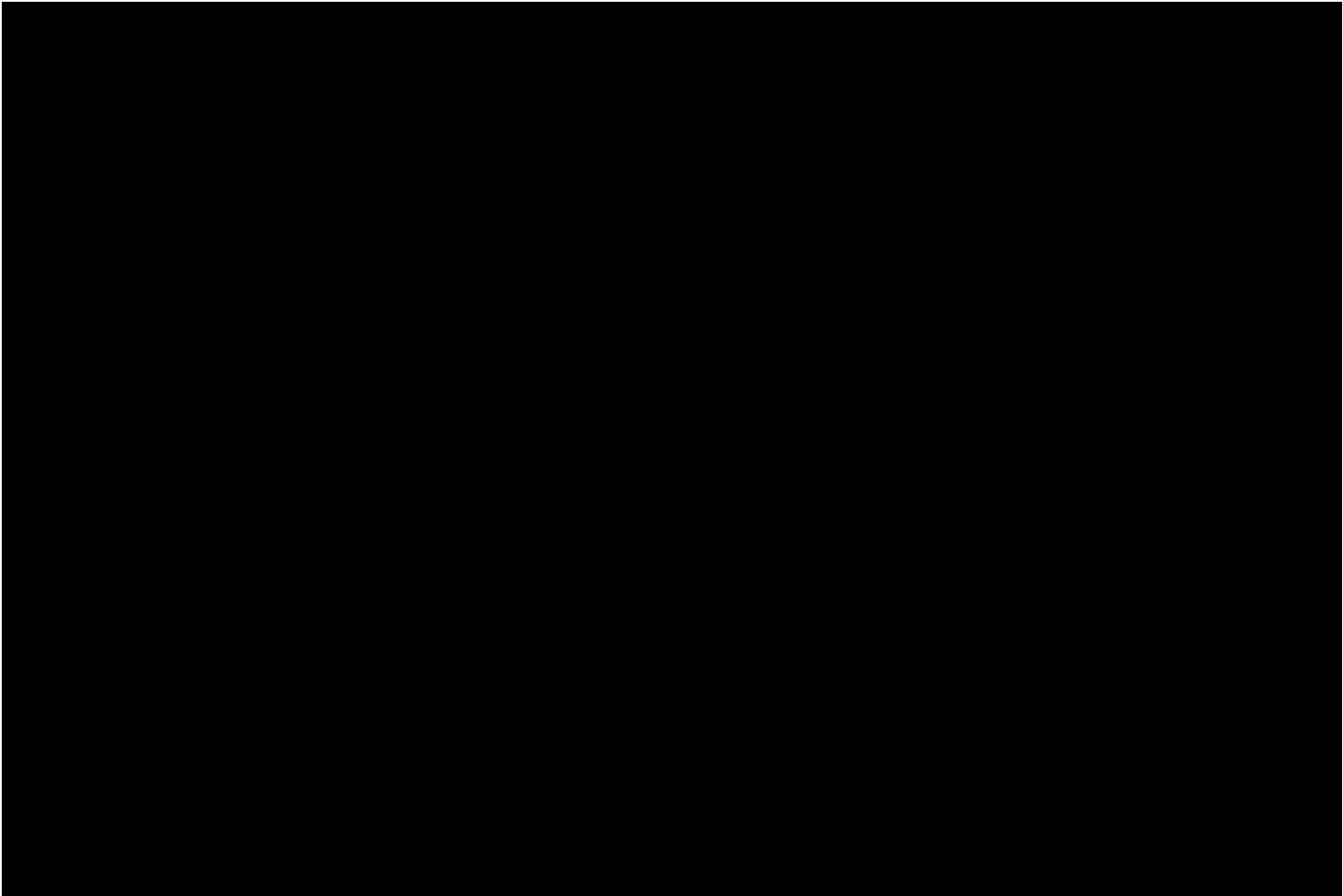
At 0045 hours, another sentry reported two persons off the fence-line, and almost simultaneously, the adjacent sentry called in to report that infiltrators had attempted to breach the fence near his post and that he had fired on them, possibly wounding one. The flight commander, accompanied by two sentry dog flight chiefs and the security police squadron duty officer, arrived on the scene. They crawled across the perimeter road to a point near where the breach attempt had been made, and saw two intruders on the ground immediately outside the wire. The flight commander challenged the men in Vietnamese, but upon challenge, the individuals attempted to flee. The security police opened fire upon the running infiltrators, hitting and stopping both. <sup>69/</sup>

The flight commander recalled all off-duty personnel from his flight and increased the security posture along the threatened sector. At 0145 hours, a squad from the Royal Australian Air Force (RAAF) air defense guard, accompanied by Explosive Ordnance Disposal (EOD) personnel and a photographer departed to recover the bodies. At 0150 hours, the detail arrived at the location of the bodies and began a sweeping action of the area. The EOD team conducted a search of the bodies and the immediate area and recovered an automatic pistol suspended by a lanyard around the neck of one of the sappers and a hand grenade from the other individual. At 0215 hours, the RAAF sweep was completed with no further results and the bodies were recovered.

At 0216 hours, another sentry reported possible infiltrators outside the fenceline to the right of his tower and approximately 50 meters off

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Two NVA Sapper Squad leaders lay as they were slain while attempting to infiltrate Phan Rang AB, 11 February 1970. Sappers commonly infiltrate nude so that clothing will not snag on wires, brush or fences.

FIGURE 5



[REDACTED]

the fenceline. One of the individuals appeared to be carrying an object strapped to his back and the other appeared to be in possession of a weapon. M-60 machine gun fire was expended into the area. At approximately the same time, the RAAF ambush squad exchanged fire with an enemy force. At 0230 hours, due to the second series of incidents, SACON Yellow was declared and the security police squadron recall was initiated. Recalled personnel were posted as blocking forces to protect the aircraft parking area and the fuels storage area in the vicinity of the incidents. All towers in the threatened area were double manned. At 0328 hours, in the absence of further activity, the SACON was downgraded to Gray but the blocking forces were retained in place to seal off the affected area in the event that a penetration of the perimeter had actually occurred. <sup>70/</sup>

At 0345 hours, the RAAF ambush patrol reported movement between the Strip Road Gate and a bridge immediately outside the base perimeter. Illumination was provided without sightings. At 0402, two more alerts were reported, and again illumination of the area revealed no enemy. Sweeps along the fence showed no one, and at first light, search operations were initiated inside the base in the sealed off area without discovering any intruders. The RAAF Air Defense Guard mounted an off-base sweep where they located a badly injured enemy soldier, and subsequently captured him. Later area searches recovered two AK-50 rifles with ammunition, and five Chinese-type homemade fragmentation grenades.



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There were no U.S. casualties nor property damage. Two NVA soldiers, later identified as sapper company squad leaders, were killed and the wounded NVA captured. From interrogation of the wounded man, the security police learned that the reconnaissance was a preparatory step for a combined two-company sapper and mortar attack to be launched within 72 hours of the reconnaissance probe. The attack did not materialize; but at 0713 that morning, the base received two rounds of 107mm rockets. The rounds impacted in open areas near the center of the base without damage or casualties. Five nights later, on 16 February, Phan Rang received nine standoff rounds of 82mm mortar fire with no damage nor casualties. <sup>71/</sup>

#### Sapper/Standoff Attack

A classic example of a sapper/standoff attack occurred at Pleiku Airport on 31 March 1971. Elements of the enemy's 408th Sapper Battalion were reported approximately 12 kilometers northeast of Pleiku four days before the attack. The unit was known to be armed with 82mm mortars, B-40, and small arms. Lunar illumination was decreasing, and the start of the spring and summer campaign gave other indications that an attack might be imminent. Because of the increased threat, SACON Yellow <sup>72/</sup> was imposed during the hours of darkness.

At 0300 hours on 31 March, the sentry on observation post Echo reported explosions in the vicinity of the control tower. During these explosions, incoming ordnance began impacting in the 0-2 and 0V-10 parking areas. SACON Red, Option I was immediately implemented. Following a call from



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the control tower that some VNAF personnel had been wounded, a dispatched ambulance picked up two wounded soldiers. An M-113 armored personnel carrier was also sent to the scene to illuminate the area and assist in the defense. Crater analysis confirmed that the incoming mortar rounds in the aircraft parking area were 82mm ordnance and were launched from the northeast. Investigation of the control tower revealed fragments of a B-40 rocket propelled grenade (RPG). The SAT immediately checked the perimeter fence and discovered holes cut in the inner and outer fences. The entire area was illuminated by mortars, an on-call flareship, and numerous white star slap flares, but none of the enemy was sighted. Security police expended 40mm grenades on suspected withdrawal routes, while helicopter gunships swept the area, and U.S. Army artillery expended 155mm ordnance into the suspected 82mm mortar launch sites.

Damage assessment revealed twelve 82mm mortar rounds impacted in the O-2 and OV-10 aircraft parking area. One 82mm round impacted on a building used by the VNAF. Two 82mm mortar rounds impacted outside the perimeter 300 meters northeast of the POL area. Seven B-40 rocket-propelled grenades impacted in the VNAF A-1E aircraft parking area and the control tower/ weather station. Eleven satchel charges were detonated, damaging four buildings (two were used as quarters for Vietnamese Air Force [VNAF] firemen, one was an electrical vault building, and one was an unoccupied steel trailer). A group sweep outside the perimeter at daybreak recovered seven undetonated satchel charges and one B-40 round. Numerous blood trails were found along the enemy withdrawal route. <sup>73/</sup>

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Damage was inflicted upon 13 USAF and two VNAF aircraft. Major damage was done to the control tower, weather station, electrical vault building and the two buildings used to house VNAF firemen. Moderate damage was done to one VNAF building and the steel trailer. Enemy losses were unknown.

Investigation of the area near the holes in the fence revealed that trip flares in the vicinity had been tied to prevent detonation. The enemy knew the exact location of the trip flares along the perimeter. The trip wires were not interwoven or placed in such a manner as to activate the flare before the flare could be reached.

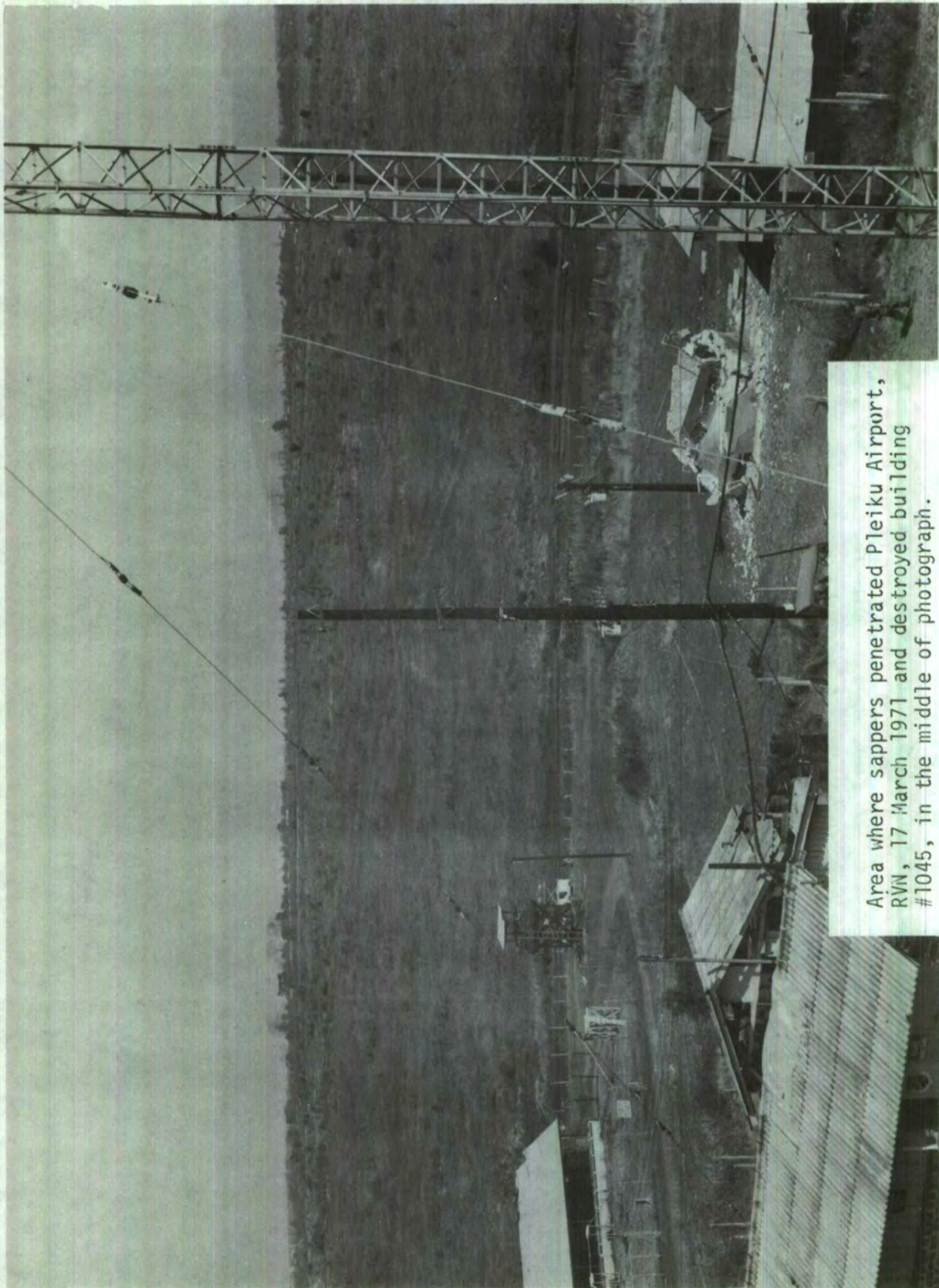
High vegetation on and off base adjacent to the perimeter fence provided concealment for the enemy during entry and departure, again emphasizing the requirement to clear areas of high vegetation on and off the base. <sup>74/</sup>

The Vietnamese Air Force (VNAF) air base defense forces were criticized. The air defense force proceeded to the affected area but took no further action. Several times the VNAF requested the USAF security police to cease firing at suspected withdrawal routes, but no adequate explanation was given for the request. Mortar illumination was provided by the Regional Forces; however, it was not accurate and failed to effectively illuminate the desired locations. VNAF base defense personnel had failed to implement a survey made of perimeter lighting deficiencies following a sapper attack on 28 February 1971. VNAF and Regional Forces personnel posted in

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Area where sappers penetrated Pleiku Airport, RVN, 17 March 1971 and destroyed building #1045, in the middle of photograph.

FIGURE 6

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positions approximately 20 meters from the point of perimeter penetration failed to observe enemy activity.<sup>75/</sup> These deficiencies prompted General L. D. Clay, Commander, Seventh Air Force, to request a review of current and programmed ground force deployment and operational assignments at Seventh Air Force bases.

#### General Clay and Local Base Defense

General Clay considered the two attacks on Pleiku (on 28 February and 31 March) as an indication that external defense of air bases might become tenuous as a result of U.S. Army, U.S. Marine Corps, and Korean force withdrawals.<sup>76/</sup>

General Clay stated:<sup>77/</sup>

*Bases which have USAF forces on perimeter defense appear acceptably protected against close-in enemy infiltration efforts of the type experienced over the past one or two years. My confidence regarding those with perimeters manned by the Vietnamese is not so high; however, a defense aspect of greater significance is the need to assure that adequate field forces are assigned and specifically tasked for external security operations in support of each air base.*

*As a matter of urgency, request a review by made of current and programmed ground force deployment and operational assignments to assure that Seventh Air Force bases, including those we occupy jointly with the VNAF, remain adequately protected against NVA and VC efforts to conduct standoff attack and attacks in force. In all locations where it is possible, request USARV forces be assigned this responsibility.*



[REDACTED]

In response to General Clay's letter, each Seventh Air Force Installation forwarded to Headquarters, Seventh Air Force, a color-coded map depicting security posts, hours each post was manned, bunkers, towers, machine gun emplacements, fencing, lighting, mine fields, mortar pits, variable posts and any additions to be incorporated into base defense effective 30 June 1971. An important section of the analysis was the posts manned by non-U.S. security police forces and the type of unit assigned.<sup>78/</sup>

General Clay wrote a similar letter to General Creighton W. Abrams, Commander, MACV. General Abrams shared General Clay's concern for base security and external defense operations in support of air bases.<sup>79/</sup> General Abrams requested the Deputy Commanding General, USARV, to review the current and programmed ground force deployment and operational assignments to determine the adequacy and problem areas foreseen in providing for the external defense and security of Seventh Air Force air bases against enemy attack.<sup>80/</sup> The Army replied that the outlook was not too promising, and of Military Region II, where U.S. installations at Phu Cat, Phan Rang and Cam Ranh Bay were located, the following was said:<sup>81/</sup>

*Although the enemy is capable of conducting small sapper and standoff attacks, no major problem areas are foreseen in pending Air Force assets. Current and forthcoming withdrawals of US combat and combat support forces coupled with increased responsibilities for those units remaining preclude allocation of US combat forces to security of US Air Force bases. Consequently US forces of all types must place greater reliance on their own capabilities to protect themselves and on the security coordination effected with ROK and ARVN forces.*



[REDACTED]

CHAPTER IV

CHRONOLOGY OF SIGNIFICANT ATTACKS  
JANUARY 1969 - JULY 1971

- 10 January 1969      Binh Thuy Air Base was hit by an estimated three rounds of 75mm enemy artillery. Two USAF, one VNAF, and one U.S. Army personnel were killed in action (KIA), two USAF and six VNAF wounded in action (WIA). Enemy losses were two killed and one captured. Five barracks, the Base Communications building, base dispensary emergency room and 14 vehicles sustained light damage while cryptographic equipment, one vehicle, 18 VNAF buildings and the 74th RVNAF Command Post were heavily damaged.
- 15 January 1969      Pleiku AB received 17 rounds of 122mm rockets. No casualties resulted from the attack in which an EC-47 and C-47D were lightly damaged. One building, the base water system and overhead electrical wire were lightly damaged; and one building, POL equipment (92,000 gallons of JP-4 fuel) were destroyed while the base supply yard was heavily damaged. Destroyed in the attack were a truck mounted crane, fuel truck, 2000 gallon water truck, road grader, 40 ft flatbed trailer, utility truck and a fork lift. The base suffered \$112,000 in material damage.
- 22 January 1969      Twenty-six rounds of 140mm rockets impacted on Da Nang Air Base causing light damage to USAF property.
- 26 January 1969      Phan Rang Air Base was attacked by 40mm, 107mm rocket, 82mm mortar, small arms fire and sappers. Sixteen USAF personnel were wounded while enemy losses were 14 killed, two probably KIA and one captured. Two aircraft were destroyed and 15 received light damage during the attack. Facility/material damage was 7 buildings, MC2A/Air Compressor, NF-2 Flood-light Set, XM 706 Commando Scout Car, Ford Truck and the F-100 parking ramp lightly damaged; MB-4 Coleman tug, M-J1 bomb light, two MA2 Service Units, FN Floodlight Set and a XM 706 Commando Scout Car destroyed.
- 29 January 1969      Binh Thuy Air Base perimeter probed by a VC reconnaissance team resulting in two members of the team killed and an unknown number wounded. No USAF casualties or property damage.



- [REDACTED]
- 13-14 February 1969 Due to enemy interdiction of the JP-4 pipeline between Phu Cat AB and the Quin Nhon Army Terminal it was necessary to airlift JP-4 into Phu Cat via bladder birds. A total of 49 sorties were flown and 269,000 gallons of JP-4 were delivered.
- 22 February 1969 Phan Rang AB was hit by approximately 82 rounds of 82mm mortar, which wounded six men. Eighteen aircraft were damaged slightly while two received major damage. Facilities/material damage was: 16 buildings, one vehicle, two fuel bladders lightly damaged while four buildings and four vehicles incurred major damage.
- 22 February 1969 Enemy sappers attacked Phu Cat Air Base, wounding one USAF man and causing no facility or material damage to the base. Enemy losses were four KIA, one WIA, and one captured.
- \* 23 February 1969 Seven rounds of 140mm rocket fire hit Cam Ranh Bay Air Base wounding three USAF personnel. Six C-130 aircraft were lightly damaged, with light material and facility damage to the base. \$10,000 in electronic equipment was destroyed by the attack in a C-130 hangar. No enemy losses were reported.
- 23 February 1969 Da Nang Air Base received 11 rounds of 140mm rockets; USAF property damage was light.
- 23 February 1969 Bien Hoa Air Base came under attack from standoff sniper fire and 107mm rockets. Three USAF and one U.S. Army personnel were wounded while two aircraft were destroyed and eight lightly damaged. Eighteen vehicles, six buildings and a bunker received light material/facility damage, while two vehicles, three buildings, supplies in Building 1814 and adjacent outside storage areas were destroyed along with a hi-pack air compressor.
- 23 February 1969 Enemy troops attacked Pleiku Air Base with 82mm mortar and 122mm rockets. Two USAF personnel were wounded in the attack and 18 were injured not as a result of hostile fire. One EC-47 was damaged and material damage to the base amounted to \$1,214.54. Enemy casualties in the attack were unknown.
- 25 February 1969 Da Nang was hit by three rounds of 140mm rocket fire causing light damage to the base.



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21 March 1969 Five rounds of 140mm rockets impacted on Da Nang Air Base causing light Air Force property damage.

x 21 March 1969 Cam Ranh Bay received enemy mortar and small arms fire, no casualties reported.

21 March 1969 Pleiku Air Base was subjected to two rocket attacks and a severe thunderstorm. Three rockets impacted on the base, at 0624 (two) and 0930 (one). Material damage to the base was light, with one civilian and three USAF personnel wounded and three injured not as a result of hostile fire. The attack at 0930 was the latest time during the day that Pleiku has ever been hit. Between the hours of 1910-1930 hrs, a severe thunderstorm, with winds estimated up to 100 kts struck Pleiku. The violent storm damaged 25 buildings (moderate to heavy damage) and seven aircraft.

21 March 1969 Thirty-two rounds of 82mm mortar and ten rounds of 107mm rockets struck the 315th SOW maintenance area and the 35th TFW main aircraft ramp at Phan Rang. This attack inflicted minor damage to the base; no casualties suffered.

24 March 1969 Fourteen rounds of 140mm rockets hit Da Nang causing light property damage.

29 March 1969 Bien Hoa Air Base received two rounds of 122mm rocket fire, one hitting outside the perimeter and the other just inside the perimeter. One USAF person was WIA while five others were injured not as a direct result of the attack. An AGE building sustained heavy damage and an MD-3 power unit was destroyed, while another building was lightly damaged. No enemy losses were reported in the attack.

27 April 1969 A grass fire started in the Marine ASP at Da Nang AB, RVN, and spread rapidly to Marine munitions. As munitions began to ignite and detonate, items were propelled in all directions creating additional fires and explosions. 81mm WP mortar rounds were blown into USAF/ASP-1 causing 2.75 rockets with WP/warheads to ignite and propel onto the base into both the USAF MMS and VNAF (on base) storage areas. At this time the MMS area was evacuated along with the other close-in areas and personnel and aircraft were ordered into shelters. Approximately 1730 hrs high order detonations started within the Marine and USAF ASP and lasted through the night. Structural damage was estimated at 1.5 million



[REDACTED]

dollars. Vehicle/equipment damage was estimated at \$52,000, this included two 6,000-pound forklifts, one 40-foot trailer, four MHU-12/M munition trailers and three M-5 munition trailers. Munition loss was at 25.5 million dollars.

- 12 May 1969 Phan Rang Air Base came under attack from enemy mortar and 107mm rockets. One USAF personnel was WIA and an F-100 aircraft heavily damaged with no reported enemy losses.
- 12 May 1969 Five rounds of 107mm rockets hit Bien Hoa causing light damage to two aircraft and destroying an MD-3 aircraft starting unit. Three buildings suffered light damage and four USAF personnel were injured (not as a result of hostile fire). No enemy losses reported in the attack.
- 28 May 1969 Bien Hoa Air Base received four rounds of 122mm mortar fire, wounding two Regional Forces personnel. Three USAF personnel were injured in the attack, not as a result of enemy fire. The south runway and a Vietnamese bunker sustained minor damage. No enemy losses reported.
- 5 June 1969 Bien Hoa Air Base was hit by four rounds of 122mm rockets. Two USAF personnel were injured, not as a result of hostile fire, and an F-100 lightly damaged. No enemy losses reported.
- 6 June 1969 Thirty-six rounds of 122mm rockets impacted on Bien Hoa Air Base (all but one round hitting on the east side of the base). Casualties in the attack were one U.S. Army personnel KIA and 26 WIA; USAF suffered two WIA and seven injured not as a result of hostile fire. Damage to the base was two EC-47s, water storage tank, seven vehicles, photo trailer and a building lightly damaged; while four buildings and two photo trailers heavily damaged. No enemy losses reported.
- 6 June 1969 Enemy gunners hit Phan Rang Air Base with ten rounds of 82mm mortar and five rounds of 122mm rocket fire. One USAF, one U.S. Army, and a U.S. civilian were WIA along with eight Vietnamese. A B-57 received minor damage in the attack. Facility/material damage was two buildings, two liquid oxygen carts and a vehicle lightly damaged and one building heavily damaged. No enemy losses reported.



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7 June 1969

Phan Rang Air Base was hit by three rounds of 107mm rocket fire. Two USAF personnel were KIA and eight WIA. Four buildings received minor damage. No enemy losses reported.

7 June 1969

Da Nang Air Base was hit by 13 rounds of 140mm rocket and seven rounds of 122mm rocket fire. Four USAF personnel were KIA and two USMC personnel WIA during the attack. Aircraft losses were: two destroyed, two heavily damaged and seven lightly damaged. Two rockets impacted on an active runway, one USN trailer was lightly damaged and a supply building and dining hall received major damage. No enemy losses reported.

17 June 1969

Eighteen rounds of 82mm mortar hit Phu Cat Air Base killing one and wounded 12 USAF personnel. Six others were injured, not as a result of hostile fire. Four buildings, five barracks and a gas pump received minor damage, while two buildings and a vehicle were heavily damaged. There were no known enemy casualties.

18 June 1969

Phan Rang Air Base received 14 rounds of enemy 82mm mortar fire. One USAF man was wounded and the base suffered minor damage. There were no known enemy losses.

20 July 1969

Bien Hoa AB was attacked at 0614 hours with 29 rounds of 122mm rockets impacting in the north and east areas of the base. No USAF personnel were WIA or KIA. One air conditioner and slide projector were damaged and three vehicles had minor damage. Building 2670 and 2672 (supply warehouse) suffered light shrapnel damage. Four trailers and five N-9 gun cameras had minor damage. A total of 11,601 unserviceable Mark-24, MOD-3 flares were destroyed. There were no known enemy casualties.

7 August 1969

A number of satchel charges apparently placed by enemy sappers, who infiltrated the area over the beach, were detonated within the confines of a U.S. Army convalescent hospital at Cam Ranh. U.S. casualties were two killed (both patients) and 98 wounded. One hospital ward was destroyed and three were heavily damaged.

7 August 1969

Suspected VC terrorists detonated an estimated 60-lb. charge in a small auto outside the USAF Language School in Saigon's 5th Precinct. The blast killed 12 people (nine VN and three VN military) and wounded 67 (28 USAF). The school was heavily damaged and two nearby houses were destroyed.



- [REDACTED]
- 22 August 1969 Da Nang AB was attacked at 0135 with ten 122mm rockets. One USAF person was KIA and 28 USAF WIA, while a storage building suffered major damage. One storage building had moderate damage. Two barracks, one supply building and the base bakery experienced minor fragmentation damage. The base swimming pool and two water mains had minor fragmentation damage. One 1-1/2 ton truck was destroyed. One USAF forklift and one 1-1/2 ton truck had minor damage. One 1-1/2 ton truck and one metro van and three one-half ton trucks suffered minor damage. Enemy casualties were unknown.
- 2 September 1969 Pleiku AB came under attack at 0631 with one 140mm rocket. One USAF individual was injured not as a result of hostile fire. Two AC-47s and one EC-47 suffered minor shrapnel damage. Enemy casualties were unknown. This was the first known attack by 140mm rockets directed against Pleiku Air Base.
- 4 September 1969 Phan Rang AB was attacked at 2347 with 17 rounds of 82mm mortar fire and one 107mm rocket. Eleven USAF personnel suffered minor shrapnel wounds, and were treated and released. Two F-100s received major shrapnel damage and one received minor damage. Three USAF vehicles received major damage and one MA-2 starter received minor damage. Enemy casualties were unknown.
- 6 September 1969 Bien Hoa AB was attacked at 0619 with 18 122mm rockets in the north and east areas of the base. Seven Vietnamese civilian employees were KIA. Nine VNAF personnel and three Vietnamese civilians were WIA. One Vietnamese civilian was MIA. One C-130 received minor shrapnel damage. The south runway received minor damage and three generators were severely damaged. Enemy casualties were unknown.
- 11 October 1969 At 0550 Nha Trang AB was attacked with ten 107mm rockets. No friendly casualties were experienced. One building received heavy damage and one received moderate damage. One building and the open air theater received minor shrapnel damage. Enemy casualties were unknown.
- 25 November 1969 Bien Hoa AB was attacked at 0523 with seven 122mm rockets. Two USAF personnel were wounded by the blasts, and 16 received indirect injuries. One building received substantial damage. Minor shrapnel damage was received by



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the passenger terminal and the parallel taxiway received minor damage. Enemy casualties were unknown.

- 12 December 1969 Bien Hoa AB was attacked at 0625 hours with 11 confirmed rounds of 122mm rockets. Three USAF personnel were WIA (direct) and five received indirect injuries. One F-100 was destroyed. A dining hall received minor shrapnel damage. An airmen's barracks, two crew quarters and group headquarters received minor shrapnel damage. One aircraft cover revetment had minor damage and three M-151 vehicles received slight to moderate damage.
- 19 December 1969 Tan Son Nhut received an attack at 0241 with four 122mm rockets impacting on the southern portion of the installation. Two hits in the Vietnamese housing area, one at the U.S. Army Heliport, and one in the 69th Signal Company (USA) compound. Five U.S. Army personnel were WIA. One building was destroyed, two buildings had minor damage and three vehicles had minor damage. Minor damage was inflicted to the passenger lounge at the heliport. Several Vietnamese were casualties in the Vietnamese housing area. Enemy casualties were unknown.
- 6,7,9 January 1970 Cam Ranh Bay AB was attacked with a total of four 107mm rockets. Two U.S. Army personnel were wounded and damage was light. Enemy casualties were unknown.
- 21 January 1970 At 0456, Bien Hoa AB was attacked with eight 122mm rockets. Twenty-six USAF personnel received indirect injuries. One C-123 received moderate damage to the nose.
- 2 February 1970 At 0637, Phu Cat AB was attacked with ten 122mm rockets. Casualties were: One USAF KIA, 15 USAF and four USA WIA. The passenger terminal was damaged. Another building received minor shrapnel damage. One enemy soldier was confirmed killed.
- 4 February 1970 At 0029, Bien Hoa AB was attacked with four 122mm rockets. Twelve USAF personnel received indirect injuries. One building and four jeeps received minor damage.
- 27 February 1970 At 2359, Bien Hoa AB was attacked with six 122mm rockets. There were 20 WIA (four direct and 16 indirect). One A-37 aircraft received major shrapnel damage, and two A-37s received minor shrapnel damage. Two F-100 aircraft received minor shrapnel damage and one C-7 received minor



[REDACTED]

shrapnel damage. One building received minor shrapnel and electrical damage, one building received minor shrapnel damage, one small building was destroyed, one truck destroyed; one auxiliary power unit received major damage, and one 20-foot section of six-inch fuel supply line was destroyed.

- 4 March 1970 At 1528, Phan Rang AB was attacked with one 107mm rocket. One USAF KIA, six WIA. Structural damage to the base was moderate.
- 6 April 1970 At 1621, Nha Trang AB was attacked with 11 107mm rockets. There were two WIA. One POL 10,000 barrel fuel storage tank was totally destroyed and one 33,000 gallon diesel fuel tank was damaged resulting in leakage of about 3,000 gallons of diesel fuel and moderate tank damage.
- 8 April 1970 At 0224, Da Nang AB was attacked with four 140mm rockets. There were one USAF, one USMC KIA, and six USAF and two USMC WIA. One USMC barracks was destroyed, one USAF communications building received major damage, one USAF communications building received minor damage, and one USMC barracks received minor damage.
- 3 May 1970 At 0609, Bien Hoa AB was attacked with four 122mm rockets. Sixteen personnel were WIA (five direct and 11 indirect). One U.S. Army Chinook Helicopter was destroyed.
- 3 May 1970 At 0045 until 0930, multiple attacks were launched against Phan Rang AB with grenades and satchel charges, ten 82mm mortar rounds, and two 107mm rockets. One USAF WIA. Two buildings at the Beach Facility sustained moderate damage. The four buildings on base received very minor shrapnel damage as a result of the rocket attack. Two vehicles received moderate damage. Two power units and one starting unit received minor shrapnel damage.
- 14 May 1970 At 0258 and 0318, Cam Ranh Bay AB was attacked with five 140mm rockets. There were no casualties. One fire truck was destroyed, one fire department building was heavily damaged, causing damage to the fire alarm system, the communications system, the fire control room, and damaging five fire trucks. Two EOD vehicles received minor shrapnel damage and one power line on base was knocked down.



- [REDACTED]
- 19 May 1970 At 1907, Pleiku AB was attacked with four 122mm rockets. One USAF person received a sprained wrist. One EC-47 was destroyed, receiving a direct hit. Two EC-47 aircraft received minor shrapnel damage.
- 21 May 1970 At 0546, Phu Cat AB was attacked with six 140mm rockets. Two WIA. A C-7 aircraft received minor shrapnel damage. The building housing the carpenter and paint shops received moderate damage and another building received minor damage.
- 26 May 1970 At 0230, Pleiku AB was attacked with four 122mm rockets. One USAF WIA. Two EC-47 aircraft were damaged by shrapnel, one getting heavy damage and one received light damage. One power unit was destroyed and two buildings received minor damage.
- 12 June 1970 At 0100, Cam Ranh Bay AB was attacked with small arms fire, satchel charges and B-40 rockets. Two USN personnel were WIA; one later died. One USN aircraft was damaged, two USN vehicles damaged, one USN hangar damaged, one USN guard tower damaged, one USN checkpoint destroyed, and one USAF jeep damaged. There were two enemy KIA and one captured.
- 2 July 1970 Phan Rang AB received two rounds of 107mm rocket fire at 1020 hours. There were no casualties, and only minor damage to three buildings.
- 9 July 1970 At 0916 hours, Phan Rang AB received two rounds of 107mm rocket fire. There were negative casualties or damage.
- 21 July 1970 At 0747 hours Phan Rang AB received one round of 107mm rocket fire, resulting in one USAF member killed and one building sustaining minor damage.
- 6 August 1970 At 1142 hours, Phan Rang AB received one round of 107mm rocket fire.
- 22 August 1970 Phan Rang AB received one round of 107mm rocket fire at 0940 hours, with no personnel casualties, but damage to one building.
- 30 August 1970 Sapper attack, POL Area, Cam Ranh Bay Air Base, RVN.



- [REDACTED]
- 31 August 1970 At 1435 hours, Phan Rang AB received one round of 107mm rocket fire, resulting in one USAF member wounded and minor damage to one jeep.
- 1 September 1970 Da Nang AB received a rocket attack during the early morning hours with only minimal damages and no casualties reported.
- 10 September 1970 An unknown size VC force fired two rounds of RPG-2, two hand grenades and small arms onto Phan Rang AB in the vicinity of the main gate at 2320 hours. The action resulted in one Vietnamese civilian being wounded, minor damage to the ice plant and concertina wire.
- 4 October 1970 Phan Rang AB received two rounds of 107mm rockets fire impacting on base. There were no casualties or damage.
- 5 October 1970 Phu Cat Air Base received two confirmed rounds of 122mm rockets. Results of the attack were no casualties, and only minor damage to the aircraft parking ramp. There was no contact with an enemy force.
- 12 October 1970 At 0030 hours, Da Nang AB received eight 140mm rockets which resulted in minor damage to the runway, an aircraft shelter, a power cable, and two buildings. Damage was immediately repaired and no casualties were reported.
- 21 October 1970 At 0135 hours, Da Nang Air Base received one 122mm rocket. No personnel or property damage was reported.
- 8 November 1970 One rocket struck Phan Rang injuring one USAF member.
- 17 November 1970 Bien Hoa AB was hit by several rounds of 122mm rockets fire. Two men were killed and minor damage to barracks was sustained.
- 29 November 1970 At 1058 hours Phan Rang AB received two rounds of 122mm rocket fire wounding two USAF personnel (minor) and damaging two buildings, one major and one minor.
- 1 December 1970 At 1928 hours Cam Ranh Bay AB received six confirmed rounds of 107mm rockets. Three were KIA; nine WIA. Commissioned Officers Open Mess (Galley) received a direct hit causing complete destruction of galley structure and all equipment and supplies contained therein.



- [REDACTED]
- 2 December 1970 Phu Cat AB received three confirmed rounds of 122mm rockets. Results of the attack were: eight USAF personnel wounded; four vehicles damaged (one destroyed), and seven buildings damaged (one moderately). There was no contact with the enemy force.
- 16 December 1970 At 2018 hours, Bien Hoa Air Base received three rounds of 122mm rockets and two 122mm rockets impacted on Bien Hoa Army Post. Three buildings received light damage. Moderate damage to open storage area.
- 21 December 1970 At 0100 hours, Da Nang AB received one 140mm rocket on the marine side of the base. No personnel or property damage reported.
- 24 February 1971 A sapper probe against Cam Ranh Bay AB resulted in no casualties, no aircraft damage, and no facilities/material damage. Two enemy were killed.
- 28 February 1971 Pleiku Airport experienced a sapper and B-40 attack, four USAF and three VNAF were wounded. No aircraft were damaged. There was moderate superficial damage done to the control tower, radio maintenance and generator building. Minor damage was done to tower #16 and K-9 kennels; an empty building was destroyed.
- 16 March 1971 Bien Hoa AB was attacked and received five 122mm rockets. Two VNAF were wounded.
- 31 March 1971 Mortar, Sapper, and B-40 rocket-propelled grenade attack was directed on Pleiku Airport. Two VNAF were WIA. Satchel charges and 82mm mortar rounds created damage to the control tower, weather station, electrical vault building and two buildings used for quarters by the VNAF. Moderate damage was sustained by another building and a steel trailer.
- 26 April 1971 Five rounds of 122mm rockets were fired at Da Nang AB destroying a POL tank and setting a large fire.
- 23 May 1971 Cam Ranh Bay AB experienced a sapper attack in which two enemy were WIA. A quantity of enemy equipment was captured. Only one USAF was slightly wounded and there were no aircraft or property damage.
- 24 May 1971 Cam Ranh Bay hit by sappers attack. One POL tank destroyed.



FOOTNOTES\*

CHAPTER I

1. (C) Command correspondence staff summary sheet. Subj: "Seventh Air Force Action on Increased Ground Threat at Bases," by Colonel K. O. Buckingham, Director Security Police, 7AF, 9 Sep 70.
2. (C) Ibid.
3. (U) Hq 7AFR 207-2, Critical Installations in Republic of Vietnam, 7 May, Change 1, 19 Mar 71.
4. (U) Hq PACAFM 207-25, Security Policy and Guidance for Guerrilla/ Insurgency/Limited War Environments, 15 Feb 71. (Hereafter cited as PACAFM 207-25.)
5. (U) Ibid. Command Correspondence staff summary sheet, subj: "Seventh Air Force Action on Increased Ground Threat at Bases," by Col. K. O. Buckingham, Director Security Police, 7AF, 9 Sep 70.
6. (U) PACAFM 207-25.
7. (U) Ibid.
8. (U) Ibid.
9. (U) Ibid.
10. (U) Ibid.
11. (C) Minutes, 7AF Chief of Security Police Conference, U-Tapao, RTAFB, 13-16 April 1970, Hq 7AF.
12. (C) Ibid.

\*Only CONFIDENTIAL material extracted from SECRET source documents.



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## CHAPTER II

13. (U) PACAFM 207-25.
14. (C) Memo for the Record, "Sapper Movement through Wire Barriers," by Lt Col W. C. French, Sr., Project Officer, GCD, 15 Apr 71. (Hereafter cited as Sapper Movement through Wire Barriers.)
15. (C) Ibid.
16. (C) Ibid.
17. (C) Ibid; (C) Study, subj: "Air Base Defense, an In-Depth Study of Tan Son Nhut," prepared by Major M. F. Allington, Air Base Defense Advisor, AFAT-5, 1 Jun 71. (Hereafter cited as "Study of Tan Son Nhut.")
18. (C) Study of Tan Son Nhut; Interview, topic: Local Base Defense, with Major M. F. Allington, Air Base Defense Advisor, AFAT-5, by Mr. J. W. Dennison, at Tan Son Nhut Airfield, 3 Jun 71.
19. (C) Study, subj: "The Threat and Lessons Learned," Jan 70, by 7AF Directorate of Security Police (Hereafter cited as The Threat and Lessons Learned.)
20. (C) Study of Tan Son Nhut
21. (C) RCS: PAF-4-1, Combat Operations After Action Report, Phan Rang AB, RVN, 26 Jan 69; Interview, topic: Local Base Defense, with Major M. F. Allington, Air Base Defense Advisor, AFAT-5 by Mr. J. W. Dennison, at Tan Son Nhut Airfield, 3 Jun 71.
22. (C) Ibid.
23. (C) Ibid.
24. (C) Sapper Movement Through Wire Barriers
25. (C) Ibid; Memo for the Record, "Counter-Sapper Techniques and Tactics," by Major General F. J. Kroesen, USA, Assistant Chief of Staff J-3 MACV J3-05, 10 June 71. (Hereafter cited as Counter-Sapper Techniques.)
26. (C) The Threat and Lessons Learned
27. (C) Study of Tan Son Nhut
28. (C) Ibid.



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29. (C) The Threat and Lessons Learned
30. (C) Ibid.
31. (C) Ibid.
32. (S) Project CHECO Study, subj: Attack on Tan Son Nhut (Extracted material (C).
33. (C) Study of Tan Son Nhut; Minutes, Sentry Dog Conference, 7AF, 20-21 April 1970.
34. (C) Ibid.
35. (C) Counter-Sapper Techniques
36. (C) Sapper Movement Through Wire Barriers
37. (U) Study, "A Study on Fatigue, Stress, and Effectiveness Among Security Police Personnel," prepared by Capt T. F. Lappin, USAF, MC 35th USAF Dispensary, Phan Rang AB, Jan 69; (U) Study, "Security Police Stress and Fatigue Study," prepared by R. E. Steinkerchner, Capt., USAF, Bio-Medical Science Corps, 7AF Surgeon, 8 Jan 70. (Hereafter cited Fatigue Study.)
38. (U) Fatigue Study.
39. (U) Ibid.
40. (C) Final Report, Subj: "Perimeter Detection and Surveillance Subsystem," AFLC Wright-Patterson AFB, Ohio, Apr 70 (Hereafter cited as Final Report.)
41. (C) Ibid.
42. (C) Study, "Operational Test and Evaluation of the Perimeter Detection and Surveillance Subsystem," prepared by Col H. B. Trimble, USAF Comdr, 37TFW and Col R. L. Lee, USAF, Chief of Security Police, 37TFW, Jan 70. (Hereafter cited as PDSS.)
43. (C) Ibid.
44. (C) Ibid.
45. (C) Final Report.
46. (C) PDSS.

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47. (C) Msg CINCPACAF to USAF, subj: Project Safe Look-Perimeter Detection and Surveillance Subsystem (PDSS), 010640Z Apr 70.
48. (C) Msg ASD WPAFB to CINCPACAF, subj: Safe Look Equipment, 031932Z Feb 71.
49. (C) Msg CINCPACAF to ASD ASXR WPAFB, subj: Safe Look Installation, 070416Z Aug 70.

## CHAPTER III

50. (S) CHECO Report, 7AF Local Base Defense Operations, July 1965 - December 1968, Hq PACAF, 1 July 1969 App I and II.
51. (S) Ibid.
52. Ibid.
53. (U) Background Paper, "The Impact of the Sapper on the Vietnam War," prepared by MACV, Oct 69.
54. (C) The Threat and Lessons Learned.
55. (C) See Chronology, Ch 4.
56. (C) RCS: PAF-4-1, Combat Operations After Action Report, Nha Trang AB, RVN, 6 Apr 70.
57. (C) Ibid.
58. (C) Ibid.
59. (C) RCS: PAF-4-1, Combat Operations After Action Report, Phu Cat AB, RVN, 2 Feb 70.
60. (S) CHECO Report, 7AF Local Base Defense Operations, July 1965-December 1968, Hq PACAF, 1 July 1969, pp 36-40; (C) Study, "A Study of Tet Offensives," prepared by 7AF Directorate of Security Police, Jan 70. (C) Coordination Note, 7AF IGS, updating KIA numbers per IGS records.
61. (C) The Threat and Lessons Learned.
62. (C) Ibid.
63. (C) Ibid.

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64. (C) Ibid.
65. (C) Msg 7AF to PACAF, Enemy Sapper Attacks, 101138Z Jan 70, RCS: PAF-4-1, Combat Operation After Action Report, Cam Ranh Bay AB, RVN, 24 Feb 71.
66. (C) The Threat and Lessons Learned.
67. (C) Ibid.
68. (C) RCS: PAF-4-1, Combat Operations After Action Report, Phan Rang AB, RVN, 11 Feb 70.
69. (C) Ibid.
70. (C) Ibid.
71. (C) Ibid.
72. (C) RCS: PAF-4-1, Combat Operations After Action Report, Pleiku Airport, RVN, 31 Mar 71.
73. (C) Ibid.
74. (C) Ibid.
75. (C) Ibid.
76. (C) Ltr, Gen L. D. Clay, Jr., Comdr 7AF to COMUSMACV, External Security for Air Bases, 22 Apr 71.
77. (C) Ibid.
78. (U) Msg, 7AF to 377 CSG, et al Security Maps, 080310Z Apr 71; Also, Memo for the Record and Staff Agencies, Area Defense for 7AF Bases, prepared by Col K. O. Buckingham, 7AF Director of Security Police, 21 Apr 71, Study of Tan Son Nhut.
79. (C) Ltr, Gen C. W. Abrams, Commander, MACV to Gen L. D. Clay, Jr., Commander, 7AF, subj: External Security for Air Bases, 29 Apr 71.

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80. (C) Msg, COMUSMACV to DCG USARV Long Binh, subj: External Security for Air Bases, 291200Z Apr 71, Doc 28; Msg 7AF CS to COMUSMACV/CS, subj: Da Nang Airfield Defense, 190835Z May 71.
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## APPENDIX A

### RECOMMENDED BASIC WEAPONRY FOR LOCAL BASE DEFENSE

<u>Weapon</u>	<u>Basic Load</u>	<u>One-Day Resupply</u>	<u>Unit Level</u>
Revolver, Cal 38 100-835-9773	30	18	-
Rifle, 5.56mm (Cal 223) M-16	90	90	-
Submachine Gun, 5.56mm GAU 5A/A	90	90	-
Machine Gun, 7.62mm M-60	1500	1000	-
Machine Gun, 50 Cal M-2	1000	500	-
Grenade Launcher, 40mm XM148 or M-79	24	24	-
Automatic Grenade Launcher, 40mm, XM174	72	72	-
Shotgun, 12 Gauge M-12	15	10	-
Recoilless Rifle, 90mm, M-67	12 Canister	9 cannister 3 HEAT	-
Light Anti-Tank Weapon 60mm, M-72	5	5	-
Mortar, 81mm, M-29	50 HE 50 ILL	50 HE 50 ILL	-
Grenade, Fragmentation M-26	*	10 per unit	Two per individual assigned

\*Local determination on individual issue.



Grenade, Irritant M7A3	*	10 per unit	Two per individual assigned.
Trip Flare M49A1	1500	20 per unit	Authorized the number unit can install and maintain.
Hand Flare M127A1	*	20 per unit	10 per individual.

\*Local Determination on individual issue.

Source: PACAFM 207-25, Security Policy and Guidance for Guerrilla/Insurgency/Limited War Environments, Hq PACAF, 15 Feb 71.



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APPENDIX B

SECURITY ALERT CONDITIONS

NORMAL CONDITION. This condition would not be utilized prior to the cessation of hostilities.

ALERT CONDITION WHITE. This was the day-to-day emergency security posture which was maintained on a sustained basis in order to meet minimum security standards.

ALERT CONDITION GREY. This posture was implemented when intelligence reports indicated a need for increased vigilance. This posture could be maintained over a period of several days or weeks if necessary. It provided the commander with additional security police personnel to increase security at entry points, observation posts, and vital resources. He could also constitute additional quick reaction forces and deploy them at various locations on the base along likely avenues of approach.

ALERT CONDITION YELLOW. This posture provided the commander with an option for utilizing all security police personnel on an eight-hour per day basis. Security police support functions would be minimized and days off cancelled to provide additional security personnel. Provisions would be made for personnel from other base functions to augment the security force. OPLAN 207-XX would specify the actions taken to provide the additional personnel required to maintain this and succeeding postures. This would normally be implemented when reliable intelligence data indicated that the base was going to be subjected to an attack, the timing of the attack could not be predicted, and the advance state of preparedness would have to be maintained for a period in excess of 72 hours. This posture was a definite drain on the resources of the base and limits the capability of each organization which furnishes augmentees in performing its primary mission.

ALERT CONDITION RED (OPTION I). This posture provided the commander with the option for utilizing all security police and augmentees to provide the maximum security possible over a short period of time. Normally, personnel would be utilized in an initial maximum effort and then stabilized into a 12 on, 12 off posture. This condition was implemented when the base was under actual attack, or when intelligence data indicated that an attack on the base was imminent.

ALERT CONDITION RED (OPTION II). This posture described the highest security posture possible when full utilization of all available security police, augmentees and base personnel. It was a desperation type operation to establish and to hold a secured line of defense around the perimeter of the



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base when the external defense forces had been overrun or were unable to cope with the threat of known enemy forces advancing toward or attacking the installation. Concurrent with the implementation of this posture all priority resources would be evacuated. Those that could not be evacuated were to be destroyed.

Source: PACAFM 207-25, Security Policy and Guidance for Guerrilla/Insurgency/  
Limited War Environments, Hq PACAF, 15 Feb 71.



APPENDIX C

HISTORY OF ATTACKS ON USAF BASES/SITES

1 JULY 69 - 30 SEPT 69

TYPE ATTACKS	TOTAL BY TYPE											
	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT	SITES	
STANDOFF WEAPONS	5	2	3	3	0	0	6	2	0	0	0	21
STANDOFF WEAPONS/SAPPER												
SAPPER												
SABOTAGE												
SMALL ARMS												
MAJOR LAND ATTACKS												
	<b>TOTAL</b>											21



**HISTORY OF ATTACKS ON USAF BASES/SITES**

1 OCT 69 - 31 DEC 69

TYPE ATTACKS	TOTAL BY TYPE											
	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT	SITES	
STANDOFF WEAPONS	2	0	2	1	2	0	7	2	0	1	4	21
STANDOFF WEAPONS/SAPPER												
SAPPER												
SABOTAGE							4					4
SMALL ARMS												
MAJOR LAND ATTACKS												
	<b>TOTAL</b>											25



**HISTORY OF ATTACKS ON USAF BASES/SITES**

1 JAN 70 - 31 MAR 70

TYPE ATTACKS	TOTAL BY TYPE											
	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT	SITES	
STANDOFF WEAPONS	3	0	7	0	0	3	5	0	0	0	0	18
STANDOFF WEAPONS/SAPPER												
SAPPER												
SABOTAGE												1
SMALL ARMS												
MAJOR LAND ATTACKS												
	<b>TOTAL</b>											<b>19</b>

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**HISTORY OF ATTACKS ON USAF BASES/SITES**

1 APR 70 - 1 JUN 70

TYPE ATTACKS	TOTAL BY TYPE										TOTAL	
	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT		SITES
STANDOFF WEAPONS	8	1	6	5	3	2	6	1	0	0	0	32
STANDOFF WEAPONS/SAPPER												
SAPPER		1 Probe										2
SABOTAGE												
SMALL ARMS												
MAJOR LAND ATTACKS												
												34



**HISTORY OF ATTACKS ON USAF BASES/SITES**

1 JUL 70 - 30 SEP 70

	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT	SITES	TOTAL BY TYPE
<b>TYPE ATTACKS</b>												
<b>STANDOFF WEAPONS</b>	0	4	3	1	1	0	6	1	1	0	0	17
<b>STANDOFF WEAPONS/SAPPER</b>												
<b>SAPPER</b>			1									1
<b>SABOTAGE</b>												
<b>SMALL ARMS</b>												
<b>MAJOR LAND ATTACKS</b>												
<b>TOTAL</b>												<b>18</b>



**HISTORY OF ATTACKS ON USAF BASES/SITES**

1 OCT 70 - 31 DEC 70

TYPE ATTACKS	TOTAL BY TYPE											
	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT	SITES	
STANDOFF WEAPONS	2	0	2	3	0	2	3	5	0	0	1	18
STANDOFF WEAPONS/SAPPER												
SAPPER												
SABOTAGE												
SMALL ARMS												
MAJOR LAND ATTACKS												
	<b>TOTAL</b>											18



**HISTORY OF ATTACKS ON USAF BASES/SITES**

1 JAN 71 - 31 MAR 71

	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT	SITES	TOTAL BY TYPE
<b>STANDOFF WEAPONS</b>	2	0	3	4	3	1	0	0	0	0	0	13
<b>STANDOFF WEAPONS/SAPPER</b>								2				2
<b>SAPPER</b>			1 probe									1
<b>SABOTAGE</b>												
<b>SMALL ARMS</b>												
<b>MAJOR LAND ATTACKS</b>												
	<b>TOTAL</b>											16



# HISTORY OF ATTACKS ON USAF BASES/SITES

1 APR 71 - 1 JUN 71

TYPE ATTACKS	TOTAL BY TYPE										
	BIEN HOA	BINH THUY	CAM RANH BAY	DA NANG	NHA TRANG	PHU CAT	PHAN RANG	PLEIKU	TUY HOA	TAN SON NHUT	SITES
STANDOFF WEAPONS	0	3	3	8	1	0	2	0	0	0	17
STANDOFF WEAPONS/SAPPER											
SAPPER			1								1
SABOTAGE											
SMALL ARMS											
MAJOR LAND ATTACKS											
	<b>TOTAL</b>										18







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## GLOSSARY

AB	Air Base
AGE	Aerospace Ground Equipment
ARVN	Army of the Republic of Vietnam
ASP	Ammunition Storage Point
BPS	Balanced Pressure (Detection) System
Cal	Caliber
CIA	Captured in Action
Civ	Civilian
CONUS	Continental United States
CRC	Control and Reporting Centers
CRP	Control and Reporting Posts
CSC	Central Security Control
Dam	Damaged
Des	Destroyed
ECM	Electronic Countermeasures
EOD	Explosive Ordnance Disposal
est	Estimate
FWMAF	Free World Military Assistance Forces
GEEIA	Ground Electronics and Engineering Installation Agency
he	High Explosive
horiz	Horizontal
Hq	Headquarters
Ill	Illumination
JDOC	Joint Defense Operating Center
KIA	Killed in Action
MACV	Military Assistance Command, Vietnam
Max Eff	Maximum Effective
MCID	Multipurpose Concealed Intrusion Detection
met	Meters
mm	Millimeter
MMS	Munitions Maintenance Squadron
NVA	North Vietnamese Army



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OPLAN	Operations Plan
PACAF	Pacific Air Forces
PACAFM	Pacific Air Forces Manual
PDSS	Perimeter Detection and Surveillance Subsystem
PF	Popular Forces
POL	Petroleum, Oil, and Lubricants
QRT	Quick Reaction Team
RAAF	Royal Australian Air Force
RAIDS	Radar Air Base Intrusion Detection System
ROK	Republic of Korea
RPG	Rocket Propelled Grenade
RVN	Republic of Vietnam
RVNAF	Republic of Vietnam Armed Forces
SACON	Security Alert Condition
SAT	Security Alert Team
SEA	Southeast Asia
SEAOR	Southeast Asia Operational Requirement
TSSE	Tactical Security Support Equipment
US	United States
USAF	United States Air Force
USARV	United States Army, Vietnam
USMC	United States Marine Corps
VC	Viet Cong
VNAF	Vietnamese Air Force
WIA	Wounded in Action
WP	White Phosphorus