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4. TITLE AND SUBTITLE				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Department of the Air Force Headquarters Pacific Air Forces, CHECO Division Hickam AFB, HI				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT A -- Approved for Public Release					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Project CHECO was established in 1962 to document and analyze air operations in Southeast Asia. Over the years the meaning of the acronym changed several times to reflect the escalation of operations: Current Historical Evaluation of Counterinsurgency Operations, Contemporary Historical Evaluation of Combat Operations and Contemporary Historical Examination of Current Operations. Project CHECO and other U. S. Air Force Historical study programs provided the Air Force with timely and lasting corporate insights into operational, conceptual and doctrinal lessons from the war in SEA.					
15. SUBJECT TERMS CHECO reports, Vietnam War, War in Southeast Asia, Vietnam War- Aerial Operations, American					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
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PROJECT
Contemporary
Historical
Examination of
Current
Operations
REPORT

ARC LIGHT
JUNE 1967 - DECEMBER 1968

15 AUGUST 1969

HQ PACAF
Directorate, Tactical Evaluation
CHECO Division

Prepared by:
MAJOR JAMES B. PRALLE
Project CHECO 7th AF, DOAC

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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. Along with the other CHECO publications, this is an authentic source for an assessment of the effectiveness of USAF airpower in PACOM.



MILTON B. ADAMS, Major General, USAF
Chief of Staff

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FOR THE COMMANDER IN CHIEF

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WARREN H. PETERSON, Colonel, USAF
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 - (d) 27TFW(DOI) 1
 - (e) 33TFW(DOI) 1
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 - (l) 464TAW(DO) 1
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 - (o) 516TAW(DOPL) 1
 - (p) 441OCCTW(DOTR) 1
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 - (b) DPLF 1
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- (3) AIR DIVISIONS
 - (a) 3AD(DO) 3

c. MAC

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 - (a) MAOID 1
 - (b) MAOCO 1
 - (c) MACHO 1
 - (d) MACOA 1
- (2) AIR FORCES
 - (a) 21AF(OCXI) 1
 - (b) 22AF(OCXI) 1
- (3) WINGS
 - (a) 61MAWg(OIN) 1
 - (b) 62MAWg(OCXP) 1
 - (c) 436MAWg(OCXC) 1
 - (d) 437MAWg(OCXI) 1
 - (e) 438MAWg(OCXC) 1
- (4) MAC SERVICES
 - (a) AWS(AMXW) 1
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(b) ADOOP 1	
(c) ADLCC 1	i. AAC
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(a) AF ICELAND(FICAS) . . . 2	(a) ALDOC-A 2
(3) AIR DIVISIONS	j. USAFSO
(a) 25AD(ODC) 2	(1) HEADQUARTERS
(b) 29AD(ODC) 1	(a) COH 1
(c) 33AD(OIM) 1	
(d) 35AD(CCR) 1	k. PACAF
(e) 37AD(ODC) 1	(1) HEADQUARTERS
e. ATC	(a) DP 1
(1) HEADQUARTERS	(b) DI 1
(a) ATXPP 1	(c) DPL 4
f. AFLC	(d) CSH 1
(1) HEADQUARTERS	(e) DOTECH 5
(a) MCVSS 1	(f) DE 1
(b) MCOO 1	(g) DM 1
g. AFSC	(h) DOTECH 1
(1) HEADQUARTERS	(2) AIR FORCES
(a) SCLAP 3	(a) 5AF(DOPP) 1
(b) SCS-6 1	(b) Det 8, ASD(DOASD) 1
(c) SCGCH 2	(c) 7AF
(d) SCTPL 1	1. DO 1
(e) ASD(ASJT) 1	2. DIXA 1
(f) ESD(ESO) 1	3. DPL 1
(g) RADC(EMOEL) 2	4. TACC 1
(h) ADTC(ADGT) 1	5. DOAC 2
h. USAFSS	(d) 13AF
(1) HEADQUARTERS	1. CSH 1
(a) ODC 1	2. DPL 1
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	(a) 313AD(DOI) 1
	(b) 314AD(DOP) 2
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	2. DI 1
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(4) WINGS

(a) 8TFW(DCOA)	1
(b) 12TFW(DCOI)	1
(c) 35TFW(DCOI)	1
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(e) 56SOW(DXI)	1
(f) 347TFW(DCOOT)	1
(g) 355TFW(DCOC)	1
(h) 366TFW(DCO)	1
(i) 388TFW(DCO)	1
(j) 405TFW(DCOA)	1
(k) 432TRW(DCOI)	1
(l) 460TRW(DCOI)	1
(m) 475TFW(DCO)	1
(n) 633SOW(DCOI)	1
(o) 1st Test Sq(A)	1

(5) OTHER UNITS

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(b) 504TASG(DO)	1

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(a) ODC/OA	1
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(2) AIR FORCES

(a) 3AF(ODC)	2
(b) 16AF(ODC)	2
(c) 17AF	
1. ODC	1
2. OID	1

(3) WINGS

(a) 20TFW(DCOI)	1
(b) 36TFW(DCOID)	1
(c) 50TFW(DCO)	1
(d) 66TRW(DCOIN-T)	1
(e) 81TFW(DCOI)	1
(f) 401TFW(DCOI)	1
(g) 513TAW(OID)	1
(h) 7101ABW(DCO-CP)	1
(i) 7149TFW(DCOI)	1

4. SEPARATE OPERATING AGENCIES

a. ACIC(ACOMC)	2
b. ARPC(RPCAS-22)	2
c. AFRES(AFRXPL)	2
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(2) DFH	1
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k.	Senior USAF Representative, US Army Field Artillery School.	1

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TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	xi
INTRODUCTION	xiii
CHAPTER I - SORTIE RATE	1
Epilogue to Sortie Rate - 9 July 1969	11
CHAPTER II - ANATOMY OF A STRIKE	15
Strike Against Target E542	15
Divert to E595	22
CHAPTER III - ARC LIGHT IN ACTION	25
Operation NEUTRALIZE (11 Sep - 31 Oct 1967)	25
Battle for Dak To (November 1967)	26
Operation NIAGARA-KHE SANH (18 Jan to 31 Mar 68)	27
TURNPIKE (19 April - 24 June 1968)	32
Battle of Kontum-Operation PLATTSBURG (7 May - 14 June 1968)	33
Defense of Saigon (June-September 1968)	34
Operation THOR (1-7 July 1968)	36
Ban Laboy (October 1968)	37
Conclusion	39
CHAPTER IV - EFFECTIVENESS	40
Effectiveness and Psyops Bomb	44
Effectiveness and Security	45
Effectiveness and SALOAs	49
Effectiveness and MSQ	52
EPILOGUE	54
FOOTNOTES	
Chapter I	56
Chapter II	58
Chapter III	60
Chapter IV	63
APPENDIXES	
I. (S) Sorties Per Month by Area - 1968	66
II. (S) Monthly Percent of Total ARC LIGHT Effort by Area - 1968 ...	67
GLOSSARY	68

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FIGURES

Follows Page

1.	(U) Tay Ninh	16
2.	(S) Operation NEUTRALIZE, B-52 Strikes	26
3.	(C) NVA Troops Converging on Dak To Camp	26
4.	(C) Battle for Dak To, B-52 Strike Areas	26
5.	(S) Quang Tri, B-52 Strikes - Jan 68	28
6.	(S) BUGLE NOTE Central	30
7.	(U) Ban Karai Pass Area	32
8.	(S) Results of Operation TURNPIKE	34
9.	(S) ARC LIGHT Targeting for THOR	36
10.	(S) Percent of Sorties by Corps Area - 1968	38
11.	(U) Leaflet Translation	44
12.	(U) Leaflet Translation	44
13.	(S) Special ARC LIGHT Operating Areas, December 1968	50
14.	(S) Special ARC LIGHT Operating Areas, June 1969	50
15.	(S) COMBAT SKYSPOT	52

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FOREWORD

From 1965 through 1968, diversity best characterized the role of B-52 aircraft. They had been used as tactical aircraft in close support of ground troops, as interdiction weapons, a substitute for combat divisions, and as the "means for meeting the enemy immediately upon discovery." These expanded roles of the B-52 occurred concurrently with an increase in the sortie rate to 1,800 per month, and the introduction of the control system called BUGLE NOTE during the KHE SANH operation in 1968.

Increased sortie rate and utilization are two of the major themes of this report. Interwoven with these two themes is the never-ending question of effectiveness. This report includes a brief discussion of the attempts to determine effectiveness. Operational security (the lack of which reduces effectiveness), MSQ (the system used to direct bombing strikes), the M-129E1 ARC LIGHT psychological operations (Psyops) bomb (a means of exploiting ARC LIGHT strikes), and Special ARC LIGHT operating areas (SALOAs) are also discussed.

Operations in which the B-52 played a significant role include: NEUTRALIZE (September-October 1967); Dak To (November 1967); NIAGARA-KHE SANH (January-March 1968); TURNPIKE (April-June 1968); PLATTSBURG (May-June 1968); Defense of Saigon (June-September 1968); THOR (July 1968); and Ban Laboy (October 1968). (For Operation COMMANDO HUNT, a major interdiction effort in Laos, a detailed study completed on 20 May 1969 by 7AF titled, "COMMANDO HUNT" may be consulted.)

Operations discussed either illustrate varied uses of the B-52, or indicate major changes in ARC LIGHT operations. Examples of the latter are KHE SANH,

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which introduced BUGLE NOTE and "Close In" bombing, as well as TURNPIKE, which led to the development of Special ARC LIGHT Operating Areas. In the case of Ban Laboy, B-52s were first used in SEA for massive "pinpoint" bombing, as opposed to traditional area bombing.

ARC LIGHT statistics could be conflicting and contradictory, but when they were available from MACV J3-073 (Special Air Operations Branch--ARC LIGHT), they were used. The reason for this decision was availability of material, consistency of source, thoroughness of information, and the fact that MACV J3-073 provided numerous other agencies with statistics.

Statistics and dates often conflict because of the use of different timing methods. Flying units, CINCPAC, SAC, and others used Zulu time in their reports for compiling "as of" statistics. MACV and units in the field often used Hotel time in their reports and "as of" dates. Since an eight-hour difference exists between "Z" and "H" time, variances are inevitable. All messages are written in Zulu time, so the dates used in this report are based on "Z" time, except in Chapter II. In this chapter, Hotel time is used, because the worksheets, logs, and other applicable information were in local "H" time.

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INTRODUCTION

The first B-52 mission in South Vietnam was flown on 17 June 1965 against a suspected Viet Cong (VC) concentration in War Zone C. From that date until July 1969, the story of the ARC LIGHT operation has been one of steady growth and expansion--growth in monthly sortie rate and expansion in utilization.

In 1965, B-52s flew an average of 300 sorties per month, primarily against enemy command and control facilities, communications lines, and base, supply, and storage areas. In November 1965, in support of Operation SILVER BAYONET, B-52s were used to weaken the enemy's defenses in preparation for an Allied offensive. Also in December 1965, the first B-52 strike in Laos occurred.

The ARC LIGHT sortie rate increased to 450 per month by August 1966, and to 650 by December 1966. With the increase of available B-52 sorties, their role continued to expand. An increasing number of ARC LIGHT strikes were planned in support of ground operations. For the interdiction campaign in Laos, a new concept called Seek, Locate, Annihilate and Monitor (SLAM) was developed. The purpose of SLAM was to concentrate the destructive capability of the B-52 into a relatively small area.

Also during 1966, the question of B-52 cost effectiveness, which has been a concern of planners ever since, came to the foreground. Terrain, the dense jungle canopy, and inaccessibility of many of the target areas raised the question of how much damage was done by the B-52 raids. Bomb Damage Assessment (BDA) by visual and photo reconnaissance was often incomplete; ground follow-up was seldom possible. Interrogations of prisoners of war and ralliers often

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indicated that a B-52 raid or series of raids had demoralized the enemy, and had created an adverse psychological effect upon him. But how could these intangibles be weighed and how reliable was the information? As the sortie rate increased, and with it the cost, effectiveness became more and more important as this report will show.

In February 1967, the B-52 monthly sortie rate was further increased to 800 sorties and remained at that level throughout the year. Before the year was over, however, the decision had been made to raise this to 1,200 sorties per month. B-52 strikes in support of ground operations continued to increase through 1967. In September and October 1967, Operation NEUTRALIZE employed B-52s to "neutralize" enemy artillery and mortar attacks against friendly positions along the DMZ. At Dak To in November 1967, B-52s were employed to disrupt and destroy an enemy buildup and potential offensive.

In January 1968, Allied forces at Khe Sanh faced a threat of major proportions. The role of the B-52s during Operation NIAGARA (the code name for the air operation in defense of Khe Sanh) changed the entire "story" of ARC LIGHT. With the sortie rate increased to 1,800 per month, and with the utilization of more rapid diversion capability via Bugle Note, the B-52 acquired the expansive role it now has.

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restricted from striking targets in Laos, and all B-52 strikes in Laos had to be at night--from 1200Z to 2200Z. Thus, when a maximum effort was desired in Laos, the compression of launch and recovery schedules made the orderly flow of maintenance activities nearly impossible.^{4/}

On 30 June 1967, SAC presented the following argument for lifting the existing restrictions:^{5/}

"Economy and timeliness of response. Two reasons for deploying the B-52 force to U-Tapao was first to achieve savings by the reduction in flying time and the fact that these sorties can go nonrefueled and second, to gain timeliness of response by the reduction of flying time. If we do not use the Thailand force to its maximum capability we are defeating the very purpose for which they were deployed.

"Security of the SAC B-52 force. When targets are located in the vicinity of the DMZ within possible SAM lethal radius some Laos overflight is required for SAM evasive maneuvers, preplanned diversion routing, and altitude and times separation. Because of the restriction we are forced into night TOTs which in turn reduce the effectiveness of the Tiny Tim support. In effect, denial of daylight overflight by U.S. Embassy Laos required mission execution under less than optimum conditions."

SAC's third argument expressed doubt that anyone could tell the difference between a B-52, KC-135, or civilian jet aircraft when the altitude flown by ARC LIGHT forces was considered.^{6/}

A final factor in lifting the restrictions on U-Tapao-based B-52s was that reaction time could be reduced four and one-half hours, if the Thailand-based B-52s were allowed to overfly Laos en route to targets in South Vietnam. This

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could result in an estimated \$1.5 million savings per month.^{7/}

The sortie rate remained at 800 per month until September 1967, when COMUSMACV requested an increase from 27 daily sorties to approximately 40 per day. This increase was believed necessary to keep pressure on the enemy's supply and infiltration system, as well as expanding the effort presently in progress along the DMZ. It was also pointed out that with the improving weather conditions in Laos, the opening of new roads, and an expected enemy buildup in other areas, the requirements for B-52 strikes would increase.^{8/}

COMUSMACV further stated in November 1967 the recent experience along the DMZ had shown the B-52 to be an effective weapon against enemy concentrations of troops and weapons. Although from 17 August to 25 October 1967, there had been an average of 16 sorties per day flown along the DMZ, he believed 40 sorties per day would have allowed him to keep pressure on the enemy's supply and infiltration system, as well as the DMZ.^{9/}

On 7 October 1967, JCS, in response to the desire for a 40-per-day-sortie rate, had requested comments from CINCPAC and CINCSAC on ARC LIGHT operations, which would provide the capability to surge for 90 days--to a 1,200 monthly sortie rate in the event operations such as occurred in August and September 1967 were to occur again.^{10/}

CINCPAC had previously recommended a 1,200-per-month-sortie rate, with the additional sorties being obtained by increasing to 30 the number of B-52s assigned to U-Tapao. In response to the "surge" capability and the 90-day continuance, CINCPAC indicated that "surging" for 90 days was not really a surge,

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but was tantamount to developing a full and permanent capability. Therefore, CINCPAC restated his original position--a 1,200-sortie rate per month beginning in March 1968.^{11/}

The recommended implementation date of March 1968 was based on SAC's evaluation of the time required to build up to the 1,200 sortie rate, the permanent stationing of 30 instead of 15 B-52s at U-Tapao, and realignment of munitions production and reserve.^{12/}

However, JCS decided to maintain the 800-monthly-sortie rate, with a surge capability of up to 1,200 per month, but requested that approval be obtained from the Royal Thai Government (RTG) to base 30 B-52s at U-Tapao. By the end of November, the RTG approved increasing the B-52 strength at U-Tapao, but only to 25.^{13/}

With the increased number of B-52s based at U-Tapao, the restrictions placed on the operation of these aircraft became more critical. On 29 November 1967, the Secretary of State informed the American Embassy at Vientiane that B-52 flights across Laos to targets in South Vietnam, North Vietnam and northern South Vietnam were now authorized.^{14/} A possible reason for lifting this restriction was the effect of the restriction itself on a recent B-52 operation in the Dak To area (See Chapter III).

The restriction on daylight strikes in Laos was lifted effective 6 December 1967, and B-52 strikes were henceforth authorized for both day and night. Also, the previous requirement for cover strikes in South Vietnam whenever a strike was made in Laos was removed, since it was no longer considered necessary.^{15/}

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With the increasing desire for more B-52 sorties and the increased number of B-52s based at U-Tapao, the decision was made in December 1967 to increase the sortie rate to 1,200 effective 1 February 1968.^{16/} Before the month of February ended, the sortie rate was at 1,800, and through December 1968, it remained at this figure. Two major events occurred in January and February 1968, which brought about this sortie increase--seizure of the Pueblo in January 1968, and the siege of Khe Sanh.

Between 3 and 6 February 1968, eleven B-52s were deployed to Guam and fifteen to Okinawa for Operation PORT BOW in support of the Korean Contingency Plan.^{17/} As the situation became more critical at Khe Sanh, COMUSMACV, on 10 February, requested the contingency force stationed at Okinawa and Guam be used to augment the present sortie rate as a temporary measure.^{18/} JCS, on 11 February, granted authority for use of the Kadena force "when operational requirements exceed capability of other ARC LIGHT/PORT BOW forces."^{19/} Thus, the sortie rate was temporarily raised to 1,800 per month. On 4 April 1968, the Southeast Asia Deployment Program Nr. 6 established a rate of 1,800 sorties per month through June 1968. Thereafter, the sortie rate was to be 1,400 per month.^{20/}

In April 1968, CINCPAC requested COMUSMACV's comments on reducing the sortie rate to 1,400 after June. COMUSMACV replied:^{21/}

"Current requirements justify utilization of 1800 sorties/month. Enemy infiltration plans and movements in Laos, Route Package I, and in-country LOCs require an immediate expansion of 7AF SW Monsoon Interdiction Program to include concentrated, sustained ARC LIGHT attacks against enemy truck parks,

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*concentration areas and supply points. This ARC LIGHT requirement is additive to the continuing requirement to support our ground operations throughout SVN."**

He further added that should the current negotiation efforts fail, the enemy would be in a better position to launch an offensive in June and July 1968. To reduce the sortie rate to 1,400 at this time would therefore have been 22/ unwise.

In April 1968, while COMUSMACV was attempting to justify the 1,800-per-month-sortie rate, the Assistant Secretary of Defense directed that a study group be formed "to assess the ARC LIGHT program...at various sortie levels to provide a basis for determining the monthly sortie level which should be maintained."^{23/} A Combat Analysis Group, J-3, conducted the study in coordination with the Strategic Operations Division, J-3, and the Defense Intelligence Agency, with the assistance of the staffs of the CIA, NSA, CINCPAC, CINCSAC, and COMUSMACV. The entire ARC LIGHT Program, from target identification and validation procedures to assessment of results, was examined.^{24/} The conclusion regarding sortie rate was that:^{25/}

"The present sortie level of 1,800 sorties per month, which is the maximum sustained rate with assigned forces, does not provide sufficient heavy strike power to extend the battle area to all of the validated lucrative targets in Southeast Asia."

* The SW Monsoon Interdiction Plan was Operation TURNPIKE. As will be shown, the B-52 role was relatively short because of in-country emergencies.

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It was therefore recommended that the current level of 1,800 sorties per month be maintained by using Kadena forces, until the tactical situation dictated otherwise. ^{26/}

Other findings of this study group can be found in the section of this report devoted to "Khe Sanh" and "Effectiveness". Not only were the credentials of this study group impressive, but so were their findings. On 22 June 1968, the Deputy Secretary of Defense approved the 1,800-per-month-sortie rate through December 1968. ^{27/}

The B-52 sortie rate continued to receive analysis and review. On 9 September 1968, an ARC LIGHT Preliminary Planning Conference was held at the Pentagon. The report of the previous study group had stated: ^{28/}

"ARC LIGHT forces while successfully accomplishing the assigned mission and specified tasks, are operationally effective but no completely objective statistical measurement has been found to provide a quantitative, definitive assessment of the program."

The May Study Group had been formed to recommend what the ARC LIGHT sortie rate should be, and in so doing had made this statement. Not only was the ARC LIGHT sortie rate studied, but attempts were made to determine its effectiveness. When the planned six-month review of ARC LIGHT occurred in November 1968, the central theme was to be effectiveness, with the future of the 1,800 sortie rate resting in the balance.

The results of the Preliminary Planning Conference and the November ARC LIGHT Follow-On Study will be discussed later in this report. The significant factor regarding sortie rate was that both groups recommended continuing the

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1,800-per-month-sortie rate.

In the meantime, COMUSMACV had been tasked by CINCPAC to provide JCS with his desired ARC LIGHT sortie rate for 1969.^{29/} Also, COMUSMACV was to include supporting rationale for his decision. COMUSMACV's answer to this request can be found in the opening statements of this report. His rationale was forwarded to CINCSAC with a request that SAC provide comments on its capability to maintain the 1,800-per-month-sortie rate after December 1968.^{30/} SAC replied it was already severely extended and the situation was worsening.^{31/}

"We cannot continue to provide 1,800 S/M and maintain our SIOP posture without additional resources. If they cannot be provided the primary emphasis should be placed on fulfilling committed SIOP tasks which will require a reduction of the SEA sortie rate."

On 18 November 1968, the Follow-On Study Group presented its findings. One of the conclusions of this group was that "the enemy threat in 1969 is of sufficient magnitude to justify the retention, as a minimum, of 1,800 ARC LIGHT sorties per month."^{32/}

The determination of the B-52 sortie rate beyond December 1968 was still undecided. On 27 November 1968, at the request of the Deputy Secretary of Defense (DEPSECDEF), JCS asked COMUSMACV for comments on a variable B-52 sortie rate of 1,400 to 1,800 per month. In this message to COMUSMACV, JCS quoted the DEPSECDEF memo. The DEPSECDEF stated he was considering a variable sortie rate for "budgeting and logistical planning purposes" beginning on 1 January 1969.^{33/}

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The rationale behind recommending a variable sortie rate of 1,400 to 1,800 per month was what the DEPSECDEF called "the cyclical nature of the war and the probable cyclical nature of detection of high priority targets."^{34/} With 1,800 sorties still available during periods of intense combat, the variable sortie rate would also reduce the FY70 budget by \$180 million.^{35/} This reduction in cost would be realized, according to the DEPSECDEF, because the fiscal year 1969 funds provided sufficient bombs for a 1,800 sortie rate through calendar year 1969, but it would only be necessary to buy bombs for 1,400 sorties in FY70. If COMUSMACV were later to require the 1,800 level indefinitely, action would then be taken to reprogram funds or request supplemental funding. The production base to maintain the 1,800 rate would be retained.^{36/}

COMUSMACV once again believed it was absolutely necessary to maintain the 1,800 sortie rate. He indicated that cessation of bombing in NVN had not lessened the requirements for B-52 strikes, because of the increased need for them against enemy infiltration routes into Laos.^{37/}

With the bombing halt in November 1968, a sizable number of U.S. tactical aircraft were made available for use in Laos and SVN. If these aircraft could be used against previous B-52 type targets, could not the B-52 sortie rate be reduced? Although the answer might appear to be in the affirmative, this was not true. B-52s were used normally against area targets whereas tactical aircraft attacked point targets. A single B-52 mission, consisting normally of six aircraft, could deliver approximately 180 tons of ordnance on a two-kilometer square target with better than 99 percent accuracy in 8 to 15 minutes. For tactical fighters to attain the same results required between 60 and 180

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aircraft, depending upon the type. Operationally, that many tactical aircraft could not be concentrated on a relatively small target in the same time period as a B-52.^{38/} Thus, tactical aircraft could not replace the B-52 for area bombing, and the bombing halt should have no direct impact on B-52 sortie rate.

On 3 December 1968, CINCPAC commented on the recommendations of the DEPSECDEF. He stated that the DEPSECDEF's proposal assumed the munitions production for FY70 would support an average rate of 1,600 sorties per month and that this would be adequate. CINCPAC did not agree with this assumption.^{39/} COMUSMACV reaffirmed his requirement for 1,800 sorties per month. If the FY70 production rate were to be reduced, there was a possibility that any subsequent production increase would lag behind the operational need. CINCPAC therefore recommended no reduction in planned production and the continuance of the 1,800 sortie rate.^{40/}

In spite of opposition from COMUSMACV and CINCPAC, the variable sortie rate was approved by the DEPSECDEF on 19 December 1968.^{41/} The problem now arose as to the best method of implementing this decision. To realize the savings desired, SAC pointed out an intermittent 1,800 to 1,400 sortie rate would not be practical. The solution recommended by SAC was to continue the sortie rate of 1,800 through mid-March 1969. From mid-April to mid-September the rate might drop to 1,400, increasing again to 1,800 by 1 October 1969.^{42/} The average would thus be 1,600, and the desired savings would be realized. Although this plan was practical, not only in terms of munitions, personnel utilization, and maintenance procedures, it assumed the enemy's efforts would

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be the strongest during the winter monsoon period.

As 1968 came to a close, COMUSMACV and CINCPAC had concurred with SAC's recommendation to continue the 1,800 sortie rate through 31 March 1969, with reevaluation at that time.^{43/} However, CINCPAC reminded JCS:^{44/}

"...to strike the number of valid ARC LIGHT targets nominated daily by field commanders would require approximately three times the currently authorized ARC LIGHT sortie rate of 1,800 sorties per month. Any reduction in the ARC LIGHT sortie rate at this time would be militarily inadvisable."

He then concluded:^{45/}

"Any programmed reduction in ARC LIGHT must be based upon a concurrent reduction in the field commanders' military requirement, and when military experience and judgment indicate that it can be reduced."

As this discussion clearly indicated, the attempts to determine the "correct" B-52 sortie rate had been one of constant concern and reevaluation. In relation to the difficulty of accurately measuring effectiveness of the ARC LIGHT operation, the \$911.3 million per year cost of the 1,800 sortie rate seems high.^{46/} Yet to COMUSMACV, the savings in friendly lives which the B-52 operation provides cannot be overlooked.

Epilogue to Sortie Rate - 9 July 1969

Although this report was primarily concerned with the period from July 1967 to December 1968, significant events occurred in June 1969 regarding the sortie rate which should be mentioned. In April, the Secretary of Defense stated that effective 1 July, the B-52 sortie rate would be 1,600 per month.

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On 16 May 1969, JCS had recommended that the sortie rate for B-52s remain at 1,800 per month through FY70.^{47/} The Secretary of Defense responded to the JCS request with a memorandum in which he stated that he noted JCS's strong "support" for continuation of the 1,800-per-month-sortie rate through FY70. Therefore, he believed ways should be found to maintain the 1,800 sortie rate without raising the cost of the U.S. effort in Southeast Asia.^{48/} The Secretary of Defense further stated:^{49/}

"Maintaining the ARC LIGHT sortie rate at 1,800 sorties will require about \$100 million in added FY69 and FY70 funds. These should be offset by reduction in some other part of the total tactical effort. Considering the large number of sorties that have been made available by the halt of bombing in North Vietnam, I would hope such action could be taken without any significant impact on combat operations in South Vietnam or Laos."

JCS's views were therefore asked on two alternatives: (1) maintaining 1,800 ARC LIGHT sorties through FY70, but reducing "some other part" of the tactical air effort by \$100 million; and (2) establishing a 1,600-ARC LIGHT-sortie rate and retaining the "currently planned level of other tactical operations." If the first alternative were selected, specific recommendations on how the cost reduction would be accomplished were required.^{50/}

JCS forwarded the Secretary of Defense's request to CINCPAC on 19 June 1969, requesting a reply by 22 June. CINCPAC, in turn, forwarded it to CINCPACAF, CINCPACFLT, and COMUSMACV.^{51/} COMUSMACV made a "brief appraisal" of alternatives and "conducted a review of the trade-offs involved."^{52/} To reduce the tactical air effort by \$100 million, COMUSMACV stated "would entail a severe degradation in capability." He estimated that it would "equate to the

loss of four F-100 squadrons and closure of the associated base," or "closing an F-4 base and redeploying three squadrons of F-4s."^{53/} Furthermore, retrieval of these aircraft would be difficult and not in time for enemy initiatives. In addition, if ARVN units were to assume a greater share of the ground war, heavy, direct air support was necessary.

To reduce the ARC LIGHT effort was believed to be equally undesirable. However, COMUSMACV believed it would be less difficult to "reconstitute the 1,800 sortie capability of ARC LIGHT than it would be to reestablish the tac air capability."^{54/} Therefore the "least undesirable" alternative presented was to accept the reduction in ARC LIGHT sortie rate.^{55/}

Having made the "least undesirable" choice, COMUSMACV pointed out the alternatives were not consistent with realities of the combat situation in South Vietnam and Laos:^{56/}

"I am convinced that ARC LIGHT and Tactical Air, in South Vietnam and Laos, have reduced the intensity of the enemy effort, and have substantially reduced the casualties among the U.S. and other Free World Forces. Too often these programs are judged by what got through instead of on a realistic assessment of that which was headed for South Vietnam but did not get here."

He concluded by recommending no change in either tac air or ARC LIGHT strength.

CINCPAC forwarded COMUSMACV's "choice" and supporting rationale to JCS on 22 June 1969 with some additional comments. He believed not only would it be more expensive and time consuming to reintroduce tactical air units, but it would be more politically sensitive than redeploying B-52s. Since B-52s were

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on TDY status, adjustments could be made with less difficulty. CINCPAC agreed, however, that neither alternative was desirable,^{57/} and by 9 July 1969, the ultimate decision had not been reached.

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CHAPTER II
ANATOMY OF A STRIKE

Strike Against Target E542

The initial request for ARC LIGHT target, TAY NINH 32190, was made on 11 June 1969 by the 1st Cavalry Division located in TAY NINH Province. Listing their requests in order of their priority, TN 32190 was number 12. The desired time over target (TOT) was ASAP to 200730 June 1969. Intelligence justification, required on all nominations, indicated the target "contained at least 97 bunkers with overhead cover (OHC), 100 foxholes, 40 fighting positions, and 4 antiaircraft/automatic weapons (AA/AW) positions." Indications revealed the area was being used as a stop-off point for supplies and personnel destined for Base Area 355 (Fig. 1). Previously, in May, there had been several contacts with established, entrenched enemy forces. Aerial reconnaissance had detected bicycles along a trail which showed signs of use by 30 to 50 individuals in the last 24 hours.

Ground follow-up on the strike was not scheduled, but air BDA was to be conducted by an element of the 1st Cavalry. The required check for noncombatants, religious shrines, or national monuments within one kilometer of the target was made. Appropriate agencies also verified that all structures in the area had been abandoned, destroyed, or converted to VC/NVA use. No friendly troops were to be closer than three kilometers to the target at TOT. Lastly, Government of Vietnam (GVN) clearance had been given for the target through 20 June 1969. The request message concluded with the Commander's objective, which had been required on all strike nominations since 18 October 1968: "to use ARC LIGHT strikes to destroy known enemy forces and installations

in support of 1st Air Cavalry Division operations."^{1/}

1st Cavalry's request went to the Commanding General of II Field Force-- where it was evaluated by the G-2 (Intelligence) and other appropriate sections. At approximately 1400 hours, on 12 June 1969, Captain Ashworth of G-2 at II Field Forces Vietnam (FFV) called MACV J3-073 (Special Air Operations Branch) on secure telephone line and gave the following information:^{2/}

- Target Number and Category 3A. The first number represented the objective which in this case was "Spoiling." The letter A was the target classification of base camps and training areas.
- Target UTM Coordinates.
- Intelligence Justification - General. Target TN32190 was a known base and resting area for logistics and personnel destined for Base 355. Indicators had been that NVA forces were moving supplies in large quantity through the Fish Hook to this Base Area.
- Intelligence Justification - Specific: TN32190 contained three base camps, two mortar positions five AA/AW positions, trench systems, 73 bunkers, and scattered huts and structures. Also 1st Cav reported the bicycle traffic.

Next, the Commanding General, II FFV, sent a message to MACV J3-073 at 1710 hours on 12 June. In both the telephone call and message, II FFV gave TN32190 first priority.^{3/} In addition to the information passed via secure phone, the message contained the required area clearance already given in the 1st Cav's nomination, a statement of the Commander's objective, which was "to-render maximum fire in support of ground forces operating against known enemy forces in zone," and the GVN clearance through 20 June 1969.^{4/}

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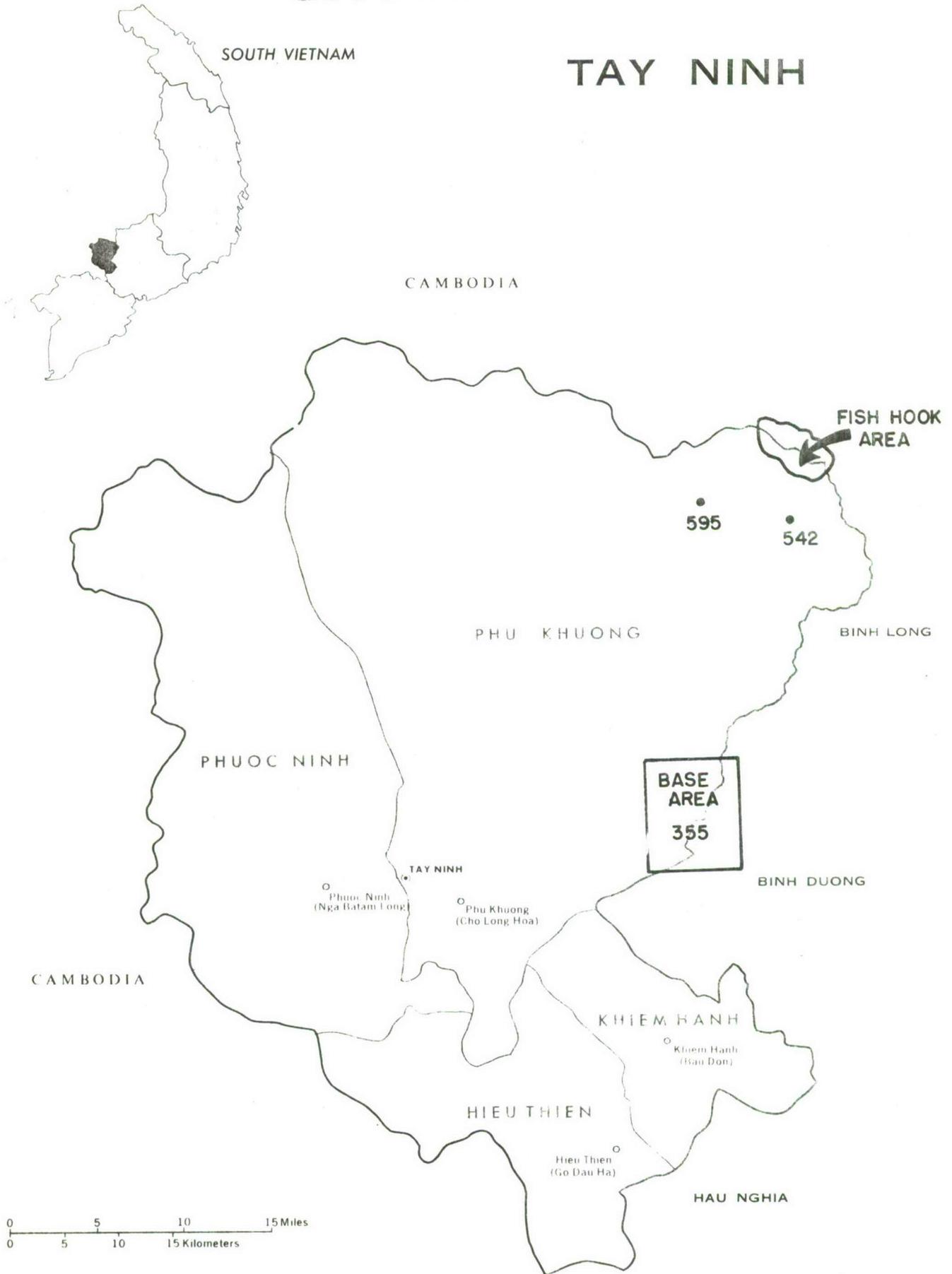


FIGURE I

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At the same time the target request was forwarded to MACV J3-073, the Intelligence data were forwarded to MACV J2-234 for briefing at the selection meeting which would consider target TN32190.

The selection meeting for ARC LIGHT strikes was held twice daily--morning and afternoon,^{5/} with representatives from J2 (Intelligence) and the SAC Advance Echelon (ADVON) present. Its purpose was to brief personnel on the targets which had been nominated to MACV J3-073. SAC ADVON, a Hq SAC operational liaison detachment stationed at Tan Son Nhut, assisted in the operational planning, processing, and dispatching of ARC LIGHT strike requests, as well as performing coordination and mission monitoring.^{6/}

After all the nominated targets had been reviewed, three general officers recommended priorities to COMUSMACV. Five targets were chosen by COMUSMACV--ten per day.^{7/} The TOTs were then matched with the selected targets according to target location, orientation of the target box, and the B-52s' base of operation. These TOTs had been provided by 3d Air Division the previous day.^{8/}

TN32190, along with the other target nominations from II FFV--plus those from the III Marine Amphibious Force (MAF), I FFV, Senior Advisor, IV Corps, and 7AF--was presented at the selection meeting on the afternoon of 12 June. It was not selected. On the evening of 12 June, the Commander, II FFV, still desired TN32190 struck and again nominated it as his first priority. Presented at the morning selection meeting held on 13 June, it was selected.^{9/}

Upon receiving notification of the TN32190 selection, J3-073 notified SAC ADVON by secure phone.^{10/} The information passed to SAC ADVON was:^{11/}

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1. The Category of the Target: I
The types of target had been determined by CINCPAC OpOrd. Category I meant the target was in SVN and did not require deep penetration of Cambodia or NVN. COMUSMACV was the approving authority and concurrence of the GVN and AMEMB, Saigon, had been given. Blanket authority had been granted on 18 March 1966 by AMEMB, Saigon.
2. Province and Target Number.
After selection, J3-073 assigned an unclassified target number to TN32190: E542.
3. Map and Sheet Number.
4. The Actual UTM Coordinates.
5. TOT time plus the no-bombs-before and no-bombs-after time, which were 0915 hours, 0900 hours, and 1000 hours, respectively.
6. Number of Aircraft: 6.
7. Type of Munitions: HE bombs.
8. Whether the M129E1 bomb were desired. (No, in this case.)
9. Ground follow-up was scheduled by elements of the 1st Cav.
10. Commander's Objective and Intelligence Justification.
11. If photo recon and Tiny Tim support were required. (No, in this case.)

This information was received by SAC ADVON at 0835 hours on 13 June 1969. ^{12/}

SAC ADVON recommended to the 3d Air Division the tactics to be employed by B-52s scheduled for the strike. This included selecting the MSQ site directing the bomb release, backup site, and check-in site. These were OL-21, OL-26, and OL-22, respectively. BUGLE NOTE Pre-IP Three North and IP Three were selected. The axis of attack was 242 degrees, and the distance from

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IP to the target was 144 nautical miles. The bomb train was selected; Drift Angle Station Keeping (DASK) procedures were not to be used.^{13/}

The DASK procedure was developed by SAC to fulfill COMUSMACV's desire for more bomb saturation of a target box. On 2 September 1968, SAC developed a procedure which placed the number two aircraft's bomb train 500 feet to the right of the lead's centerline. Number three was located 500 feet to the left of centerline--with 1,000 feet thus separating two and three.^{14/} These tactics were tested on selected missions and proved to be successful in fulfilling COMUSMACV's desire. DASK was proposed on 19 January 1969 by the 3d Air Division, approved by SAC on 31 January, and implemented on 10 February 1969.^{15/} On 24 March 1969, DASK was to be used on all strikes, unless requested otherwise, or the strike was to be "close-in".^{16/}

Returning to the strike on E542, SAC ADVON, after determining the tactics, called the 3d Air Division on secure telephone, and passed both MACV J3-073 strike request information and the recommended tactics. This occurred at 0925 hours on 13 June 1969.^{17/}

E542 was nearly ready for strike. What remained was for the 3d Air Division to pass the strike information to the 4133d BW (Provisional), which would execute the strike and determine the actual flight route, operations, and procedures to be used. (Planning, briefings, and the like, which were accomplished at Guam, may be obtained from SAC directives, OpOrds, etc.) Certain information pertinent to the actual route, altitude, and withdrawal procedures (determined by 3d Air Div) had to be used by TACPAL (Bomber Plans Branch) to publish

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its Frag Order; it will be discussed later. The 3d Air Division also reviewed SAC ADVON's information and confirmed the mission data for striking E542. A return telephone call was made to SAC ADVON at 1325 hours on 13 June to pass data which included the secondary target selected by 3d Air Div. SAC ADVON relayed the secondary target at 1330 hours to MACV J3-073; it, in turn, passed this information to CG, II FFV.^{18/}

With the initial coordination accomplished, the "message traffic" began. At 1330 hours, COMUSMACV sent out his strike request to SAC ADVON, II FFV, and others.^{19/} (The message contained the same information previously passed to SAC ADVON by phone at 0835 hours on the same day.) At 1410 hours, SAC ADVON hand-carried a copy of its worksheet to TACPAL, enabling this branch to immediately begin its work. SAC ADVON also double-checked the draft of the strike request message against MACV's request (1430 hours), and at 1545 hours sent out the DEPCOMUSMACV for Air's strike request.^{20/} This strike request went to the supporting tanker wing at Okinawa, 3d Air Div, and the 4133d Strategic Wing at Guam, II FFV, and the three MSQ sites concerned--OL21, OL22, and OL26.

After receiving SAC ADVON's worksheet, TACPAL coordinated with those 7AF agencies which supported ARC LIGHT activities. The center UTM coordinates were extracted from this worksheet, with range and bearing being determined from the nearest TACAN station. Next, a five-mile circle was drawn, with the center UTM (center of target box) representing the center of the circle.^{21/} Called the "Heavy Artillery Area," it was to be avoided by all friendly aircraft during the TOT block. The TOT block--the no-bombs-before, no-bombs-after time--had been determined by MACV J3-073 in the original telephone call to SAC ADVON. A

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message designating the TOT block, coordinates of the center of the target box, distance, degree, and the nearest TACAN station was then sent by TACPAL to all 7AF Tactical Air Control Center (TACC) flying units at approximately 1500 hours on 13 June 1969.^{22/}

E542 did not require electronic intelligence (Elint), IRON HAND, or MIG CAP; if it had, from approximately 1500 to 1600 hours, TACPAL would have coordinated with appropriate 7AF agencies to provide them.^{23/}

The situation as of 1600 hours on 13 June was as follows: 1st Cav, which had requested the strike through II FFV, had been notified of the pending strike by secure line from II FFV. II FFV had received the information from MACV J3-073 (by secure line), COMUSMACV's message of 1330 hours, and SAC ADVON's message of 1545 hours. MACV J3-073 had received verification from SAC ADVON by secure telephone at 1325 hours. SAC ADVON's request had been verified by the 3d Air Div at 1325 hours, and TACPAL had begun its functions after receiving SAC ADVON's worksheet at 1410 hours. The applicable MSQ sites were alerted by SAC ADVON's message of 1545 hours, as were all flying units by TACPAL's activity message of 1500 hours.

Activity resumed after the 3d Air Division's Frag Order, sent at 1905 hours on 13 June, had been received.^{24/} It had been sent to COMUSMACV, SAC ADVON, TACPAL, applicable B-52 and KC-135 Wings, and to three applicable MSQ sites. Information pertinent to functions of COMUSMACV and SAC ADVON had already been received via telephone. To the SAC units--B-52, KC-135, and MSQ sites--it was directive, and gave them the necessary information to execute the mission after

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SAC's Execution Message was received. TACPAL, however, needed specific information from this Frag Order to complete its own frag.

The primary items required by TACPAL were those pertaining to the route and altitude which the incoming B-52 force would fly. TACPAL had been tasked with the responsibility of insuring that the airspace in which the B-52s would be flying was cleared by the Saigon Center. Automatic clearance for the altitudes from 30,000 to 33,000 had been received in August 1968, but a formal request was still required.^{25/}

TACPAL's Frag Order was drafted at 2030 hours on 13 June. (This was not sent, because a divert request was called to TACPAL by SAC ADVON before transmission of the Frag.) The addressees included the GCI sites involved, DASCs, and MSQ sites. III DASC and Paris Control (GCI) were to issue Heavy Artillery Warnings, and the DASC, whose area included E542, was to assure the FAC visual reconnaissance of the target area.

Divert to E595

Everything was ready for the strike on E542 at 0915 hours on 14 June 1969. All that was needed was SAC's Execution Message--sent at 0015 hours on 14 June--listing the "E" hour as 0331, on 14 June.^{26/} Before the Execution Message was sent, however, a divert request from E542 to another target (identified in this report as E595) was sent in by 1st Cav.

At approximately 2130 hours on 13 June, II FFV called MACV J3-073 requesting E542 be diverted to E595. The coordinates of the new target, the TOT (which remained 0915), intelligence justification, and target classification (3A) were

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given. The fact that ground exploitation was not scheduled was also passed to J3-073.^{27/} Personnel authorized to approve and select targets were notified and approval was obtained to divert the ARC LIGHT force planned for E542 to the new target. The target box and location of the new target were close to the original target; therefore, relatively few operational changes were necessary. Of prime consideration in diverting from the original to the new target were the intelligence justification and the commander's objective. II FFV indicated that:^{28/}

"The target contains 65 bunkers, of which 50 are newly constructed, 5 large storage structures, a trench complex and AW PSNS, VR has sighted numerous packs and web garb (clothing) and a large foot bridge which has had heavy traffic during the past few days. Sensor and VR have indicated the presence of an estimated company size unit in the target area."

The Commander's objective was "to deliver maximum ordnance in support of ground forces against known enemy forces."^{29/}

SAC ADVON was notified of the divert request by J3-073 at 2220 hours.^{30/} The latter verified that the B-52 force scheduled for E542 could strike E595 and made the following changes: IP gate three was changed to seven, distance from IP to target became 159 NM, and DASK procedures were selected. This information, plus the new UTM coordinates, were called to the 3d Air Div at 2245 hours and confirmed at 2250 hours.^{31/} SAC ADVON's worksheet was completed at 2255 hours and hand-carried to TACPAL at 2315 hours.

With the new information, TACPAL drafted another Frag Order, following the same procedures they had used on the original undelivered frag. At approximately

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2400 hours, ^{32/} it sent an amended Activity Message.

By this time, the supporting messages were being sent. Rather than paralleling the sequence in which the events had occurred, the message sequence for E595 was as follows:

1. 3d Air Division's Amended Frag Order at 2330 hours.
2. SAC ADVON's Strike Request at 2359 hours.
3. COMUSMACV's Strike Request at 0114 hours, 14 June.
4. 1st Cav and II FFV Nomination at 0145 hours.
5. TACPAL's Frag Order at 0510 hours.

At 0918 hours on 14 June, the first B-52 cell dropped ordnance on target E595, but the aircrews were unable to verify any secondary explosions because of undercast. Fourteen minutes later at 0932 hours, aircrews, of the second cell had the same report. ^{33/} Results of the strike originated as E542--subsequently diverted to E595--were unknown. An overcast precluded a clear picture of the target.

The key to rapid response to demands from the field for B-52 strikes was the secure telephone line. The built-in system of checks and double checks was more than adequate to insure safety.

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CHAPTER III
ARC LIGHT IN ACTION

Playing varying roles--contingent upon the needs and desires of COMUSMACV-- the B-52 was flown in all major operations conducted during 1968. This chapter discusses some of these roles played in campaigns occurring during July 1967 through December 1968.

Operation NEUTRALIZE (11 Sep - 31 Oct 1967)

During the summer months of 1967, friendly positions along the DMZ were receiving periodic bombardment from enemy artillery, rocket, and mortar fire. Target acquisition of the enemy's gun emplacements was extremely difficult, since they were highly mobile and well-camouflaged. As the intensity and frequency of the enemy bombardment increased during July and August, the Seventh Air Force Commander, who was responsible for the TALLY HO operational area, developed a plan for neutralizing these attacks.^{1/} The plan was presented at a COMUSMACV command/staff conference, and on 10 September 1967, a SLAM type operation for the area just north of the DMZ was formulated.^{2/}

The purpose of Operation NEUTRALIZE, was to reduce the enemy threat to the Dong Ha, Gio Linh, Camp Carroll, and Con Thien areas by concentrating massive and continuous airpower on a relatively small area. By exploiting daily photo recon, this was to be accomplished with sustained poundings by B-52s, followed by tactical air strikes. There were to be two ARC LIGHT missions daily, one between 0500 and 0800 hours and the other between 1100 and 1400 hours. These strikes were to be followed by approximately 36 tactical sorties. Additional

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sorties were to continue on a 24-hour basis.^{3/}

Seventh Air Force requested from COMUSMACV on 9 September 1967, blanket approval for ARC LIGHT strikes in two sections of the NEUTRALIZE area. Prior to the strikes, all the necessary Rules of Engagement were to be verified and all ARC LIGHT TOTs coordinated with 7AF to insure maximum tactical air follow-up. CINCPAC approved this procedure on 11 September 1967.^{4/}

During the month of September, there were 22 strikes and 204 sorties executed in support of the operation.^{5/} However, in the entire DMZ, NVN, and Northern I Corps area, there were 85 strikes (758 sorties) flown. This represented 85 percent of the entire month's ARC LIGHT effort.^{6/} (Fig. 2.)

In November, 75 percent of the ARC LIGHT effort was in the NVN, DMZ, and Northern I Corps area making a total of 74 strikes (636 sorties). Twenty-one of these strikes (189 sorties) were in direct support of Operation NEUTRALIZE.^{7/}

Battle for Dak To (November 1967)

In the latter part of October 1967, intelligence sources reported that elements of the 1st NVN Division were moving toward Dak To in Kontum Province, using converging routes from the west, southwest, and north. (Fig. 3.) Reacting to the threat, Allied forces moved into the area and established their headquarters at Dak To. From 3 November to 23 November, nearly all the battles were centered in the hills around Dak To.^{8/} Because of the dense, rugged terrain and triple canopy vegetation, it was extremely difficult to adequately utilize coordinated air/ground attacks. The tactics developed by U.S. troops were: make contact, pull back, call in artillery and air, and then return to the

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SOUTH VIETNAM

QUANG TRI

OPERATION
NEUTRALIZE
B-52 STRIKES

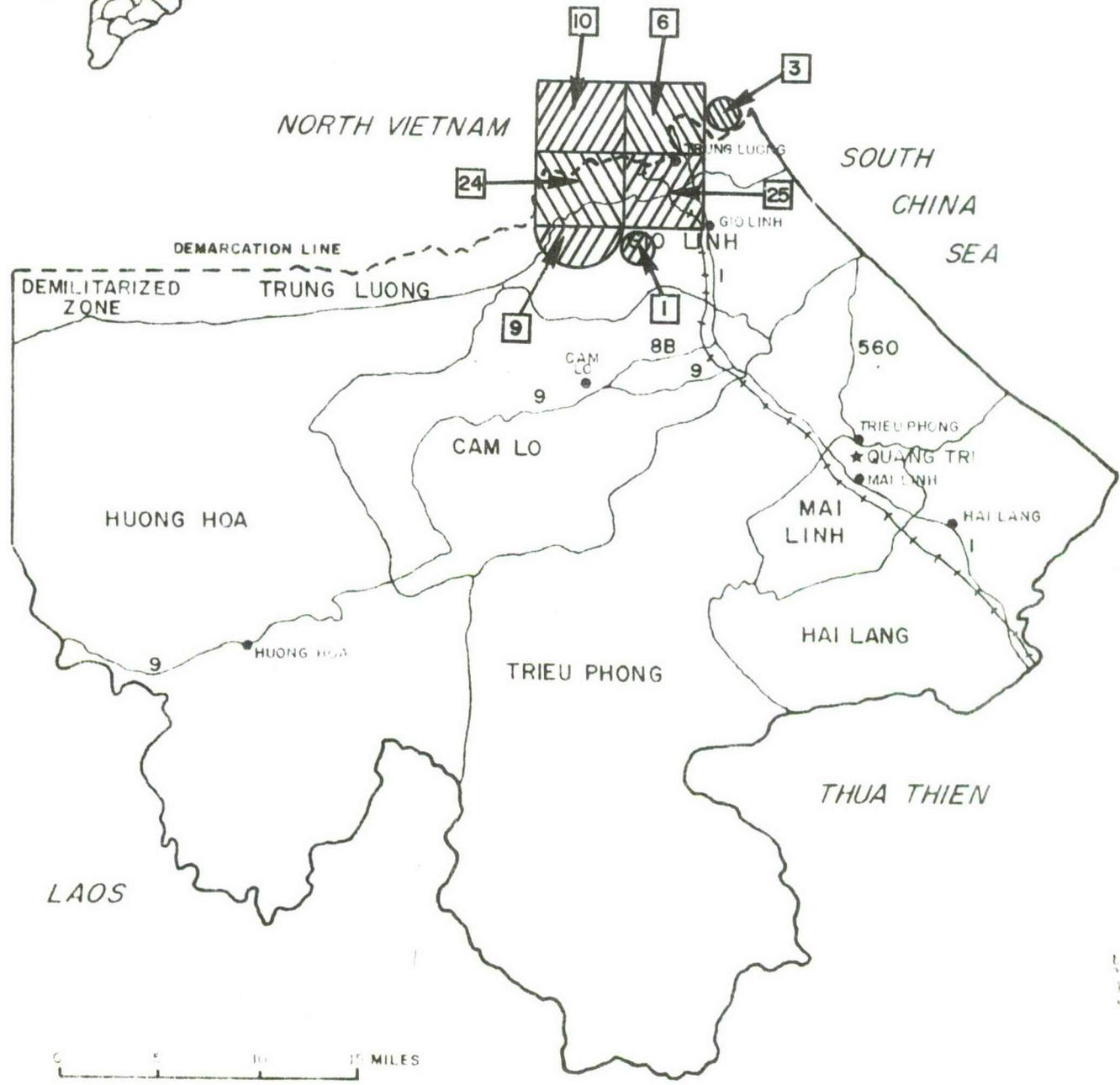


FIGURE 2

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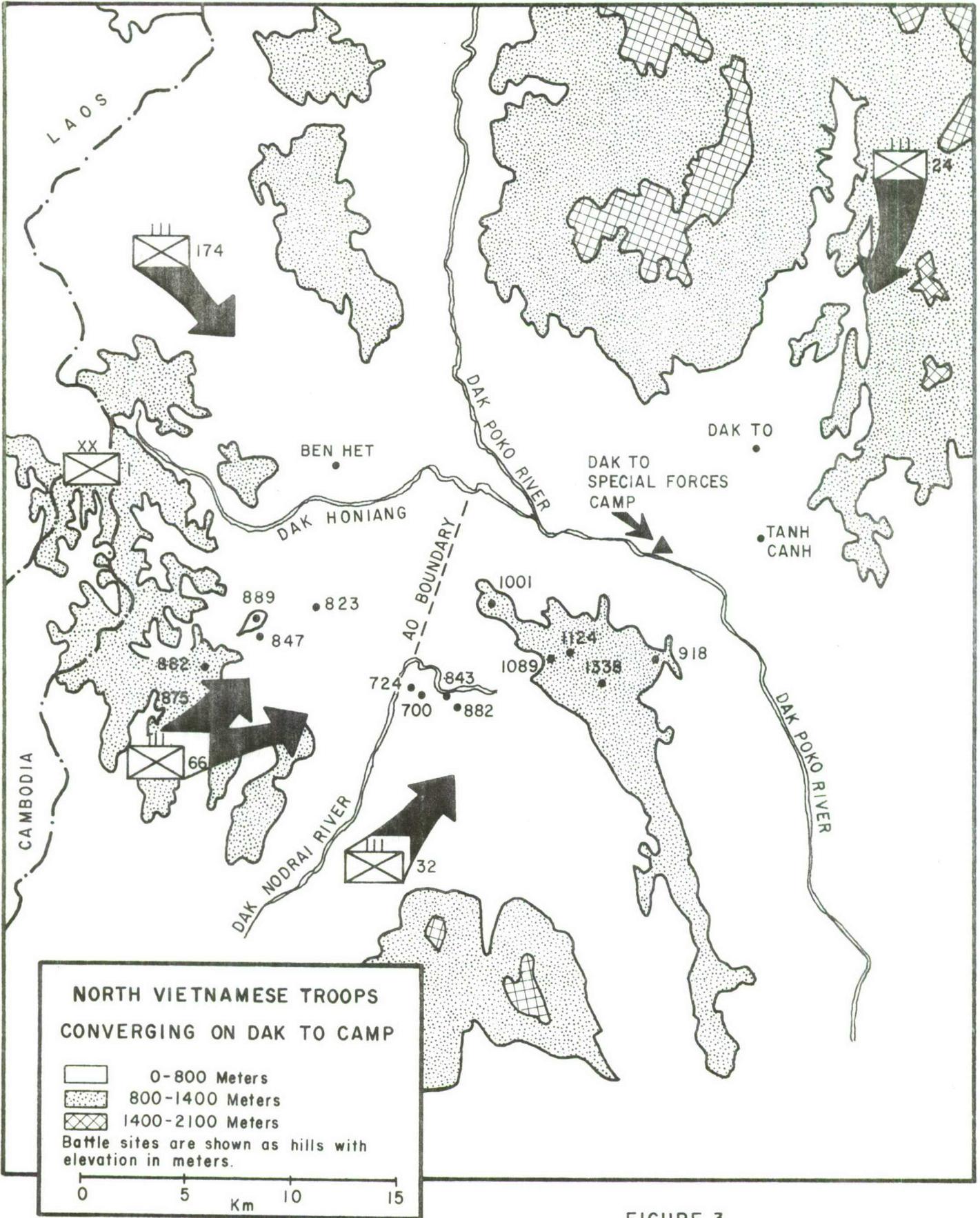


FIGURE 3

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BATTLE FOR DAK TO

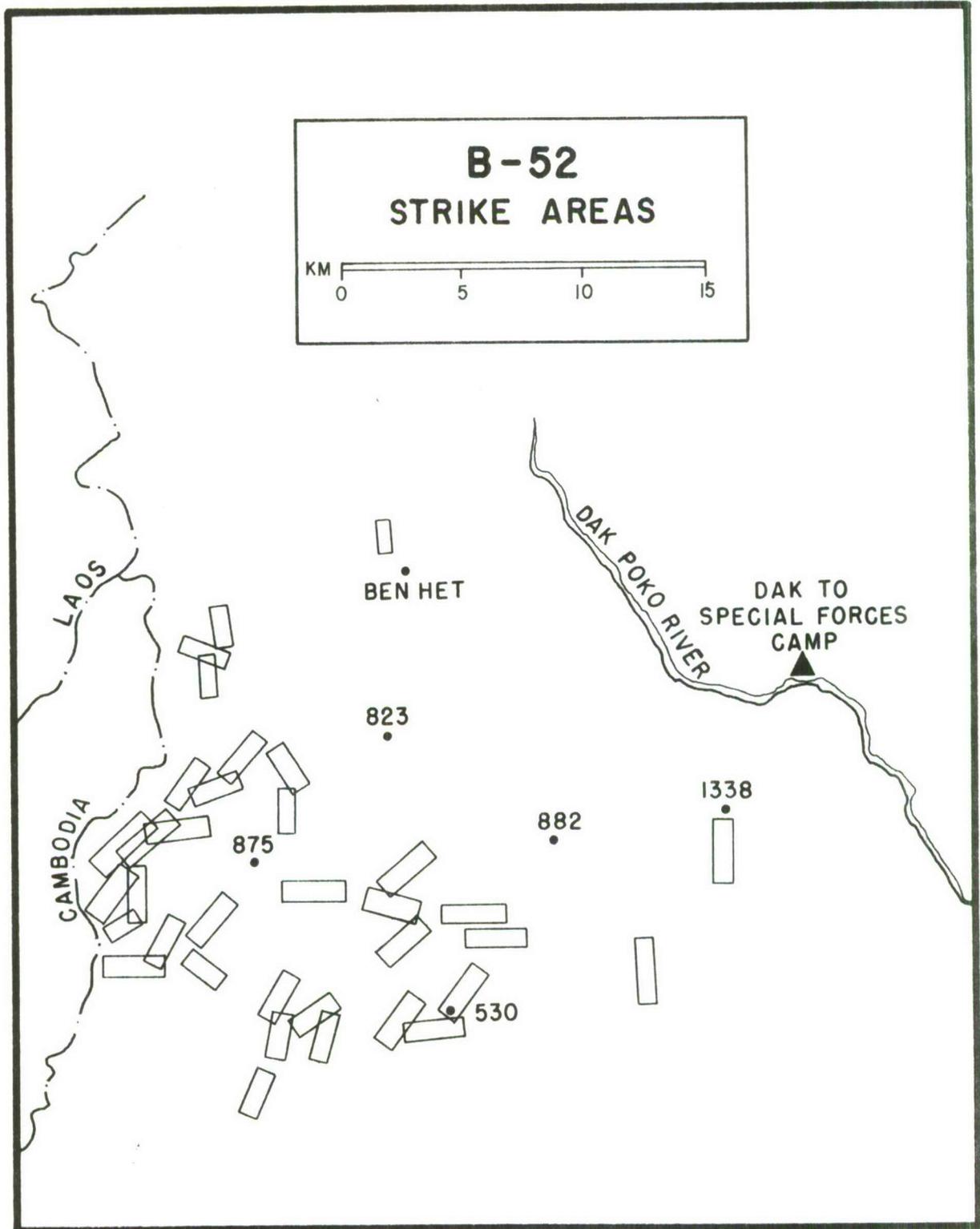


FIGURE 4

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contact area. The B-52, along with the B-57, made strikes against command centers, troop assembly areas, and supply installations. These strikes were especially effective in destroying enemy ammunition caches along remote ravines that could not be reached by ground troops.^{9/} The B-52s flew 268 sorties and delivered 7,504 tons of bombs during this operation.^{10/} (Fig. 4.) A total of 196 secondary explosions were noted in the Dak To area.^{11/}

Operation NIAGARA-KHE SANH (18 Jan to 31 Mar 1968)

The 77-day siege of Khe Sanh has become one of the most famous battles to date in Southeast Asia. It has been written about in newspapers and journals and has been the topic of many special reports. Therefore, this report will only briefly discuss the actual operation itself. Primary emphasis will be directed instead to two of the major innovations which came about as a result of Operation NIAGARA: Bugle Note and Close-in bombing (less than three kilometers from friendly forces).

By the end of 1967, intelligence sources and visual observations confirmed a large increase in enemy activity around the Khe Sanh area. The most readily accessible infiltration for North Vietnam forces bypassing the DMZ was Khe Sanh, located along Route 9. All indications pointed to an enemy plan to overrun this area.^{12/} Although the exact strategy of the enemy was not known, it appeared that he hoped to build up powerful forces around fixed U.S. and friendly positions, attack throughout the Republic of Vietnam, and in general, place pressure on friendly forces in the hopes of encouraging insurrection.^{13/}

Intelligence sources indicated:^{14/}

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"Hanoi undertook a massive buildup of troops and supplies in the RVN to support a series of military actions designed to draw Allied forces away from population centers. The enemy planned to follow this with simultaneous countryside assaults on cities and Allied bases. The overall objective was to confuse and demoralize and foment insurrection."

Whatever the prime objective of the enemy, his buildup was evident, and Khe Sanh was being threatened. COMUSMACV, on 6 January 1968, prepared to mount a sustained and concentrated bombing attack to disrupt the enemy's offensive plans against Khe Sanh. On 15 January, COMUSMACV proposed to CINCPAC and the American Embassy at Vientiane, an air interdiction plan in defense of Khe Sanh.^{15/} The area included the northwestern corner of I Corps and the adjacent area of Laos. The American Embassy approved this action on 16 January, and CINCPAC concurred on 17 January.^{16/} On 21 January, the plan went into effect.

The B-52 played two distinct and important roles during the operation. The first and more traditional role consisted of destroying enemy concentrations, control centers, and storage areas. The second and unique one was that of close air support for troops in contact. During January, B-52 targets were primarily troop concentrations, artillery positions, logistic and ammunition storage areas, and command and control elements.^{17/} (Fig. 5.) A total of 369 secondary explosions resulted. On 30 January, the largest B-52 strike of the war to that date was flown against a command and control center in eastern Laos, 36 sorties in the morning and 9 at night. There were 85 secondary explosions and numerous cave-ins.^{18/} These attacks greatly disrupted the enemy's plans. Gen. Creighton W. Abrams, Jr. later explained:^{19/}

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QUANG TRI

B-52 STRIKES JAN-68

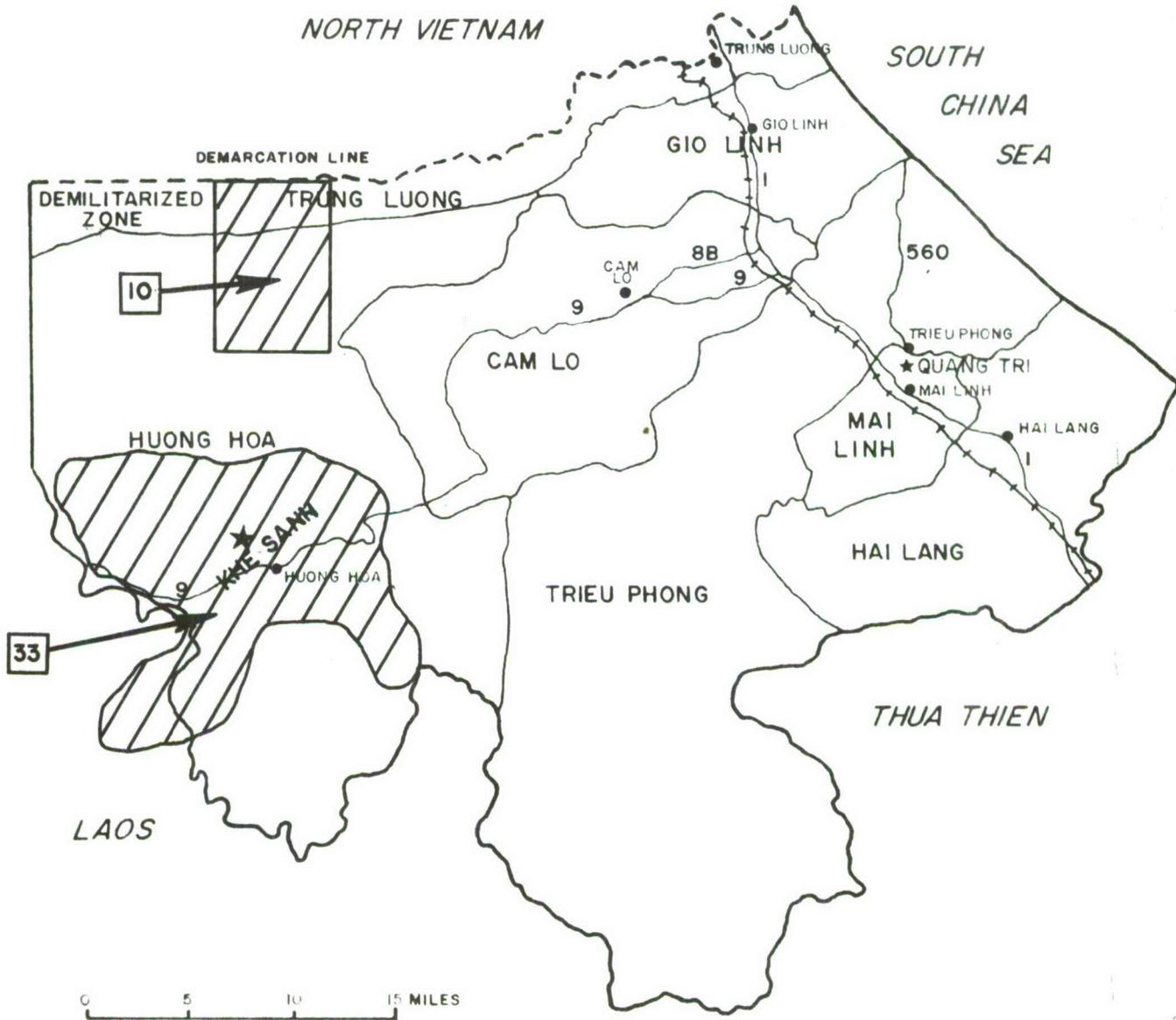


FIGURE 5

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"The enemy's strength lay in his great numerical superiority (20,000 as opposed to 2,500)...His weakness was his inability to mass his forces without becoming vulnerable to B-52, tactical air, and artillery."

As the situation became more critical around Khe Sanh, COMUSMACV, on 13 February, advised CINCPAC the tactical situation at Khe Sanh and in other areas of Quang Tri Province "may require that full defensive fire be brought into close proximity of defensive positions." He recommended that the previous restriction placed on B-52s, forbidding striking within three kilometers of friendly combatants, be rescinded.^{20/} On 18 February, CINCPAC granted permission for a change. In emergency situations:^{21/}

"...minimum separation criterion of three kilometers from friendly combatants may be reduced to one kilometer when circumstances warranted as determined by COMUSMACV. A strike request with less than three kilometers separation will be considered a deviation from normal criterion."

The first "close in" strike was conducted on 26 February at a distance of 1.2 kilometers from friendly forces.^{22/} As General Abrams later stated, this change in the basic ARC LIGHT operation order "was quite possibly the deciding factor at Khe Sanh."^{23/} He added: "It was only after the B-52s dropped within 1,000 meters of the fence at Khe Sanh that the enemy showed signs of crumbling. Prisoners revealed they had been briefed that B-52 aircrews were prohibited from bombing within three kilometers radius of the fence to be safe."^{24/}

Coincidental with the need for closer B-52 strikes, COMUSMACV faced another problem. The time required to preplan a B-52 mission did not allow him the

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capability of hitting new targets as they developed. To provide this maximum responsiveness, SAC proposed a plan coded Bugle Note.^{25/} The plan was to work as follows: "Every one and one-half hours, a cell of three B-52 aircraft would arrive at a predesignated Pre-IP to be picked up by MSQ (radar), and directed to one of a series of IPs and then to a specific target in the Khe Sanh area."^{26/} This meant the target could be changed every one and one-half hours. If necessary, the same target could be hit continually. To prevent establishing a TOT pattern, the TOTs could be reduced to as low as one hour or increased to two hours.^{27/}

COMUSMACV and CINCPAC agreed with this plan and requested immediate implementation. In addition to the 98 sorties which would be provided by Bugle Note, CINCPAC/COMUSMACV requested 12 more B-52 sorties to be used in SVN.^{28/} Since JCS had already approved COMUSMACV's request for utilizing the Port Bow force for the Khe Sanh emergency on 11 February, the sortie rate reached 60 per day.

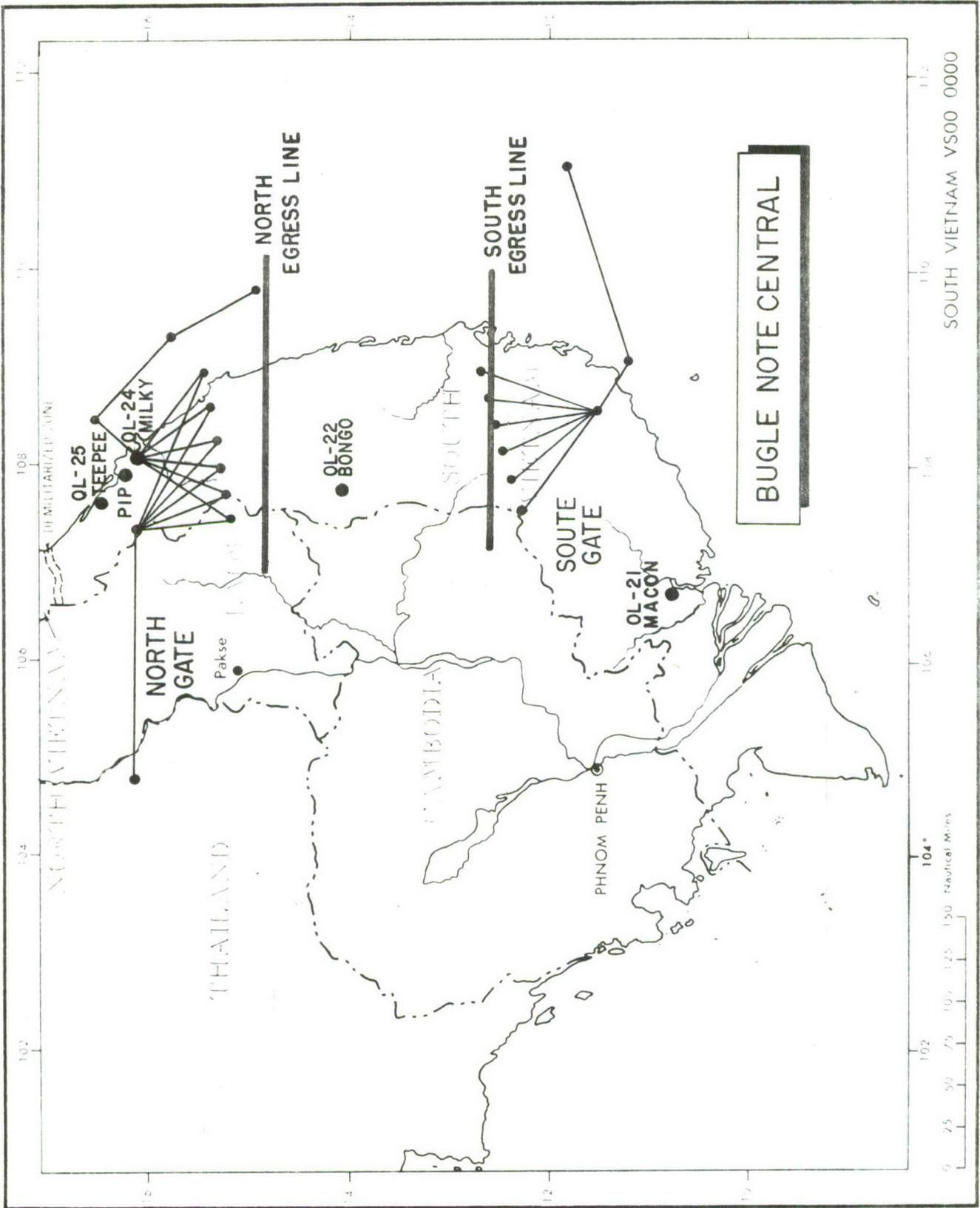
Bugle Note was initiated on 15 February 1968. As the operation developed, it proved more effective to have six B-52s over a target every three hours, rather than three every hour and a half. Six B-52s provided better target saturation and more time to evaluate results before the next strike.^{29/} This procedure is still in effect.

To be able to rapidly develop target boxes for the incoming B-52 strikes, the Khe Sanh area was overlaid with a grid system in which each "box" represented a one by two kilometer target area--the same size as could be effectively hit

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FIGURE 6

Produced by the U.S. Army Geographical Command

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by a cell of three B-52s.^{30/} The coordinates of the "box" to be hit were forwarded to the MSQ site, which in turn directed the incoming B-52 sorties.

The BUGLE NOTE concept proved to be so effective that it was expanded to include all of the area presently being struck by B-52s. (Fig. 6.) Bugle Note also negated the need for the Quick Reaction Force which had been in being.

The following chart shows the increased utilization of the Bugle Note concept.^{31/}

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>
Sorties Scheduled	924	1466	1860
Q.R. Sorties	117	30	0
B/N Sorties	0	707	1515
Percent of Bugle Notes	0	48.2	81.4

From 18 January through 21 March 1968 in support of Operation NIAGARA, SAC flew 2,612 B-52 sorties in 486 strikes and delivered approximately 75,631 tons of ordnance. Of these sorties, 553 struck within three kilometers of friendly ground forces. There were 1,683 secondary explosions recorded, and 2,222 sorties were directed to the target under the newly developed Bugle Note procedures.^{32/}

Khe Sanh was a watershed for the ARC LIGHT operation in SEA. The sortie rate stood at 1,800 sorties per month and gave COMUSMACV the opportunity to strike more targets. Bugle Note allowed this increased sortie rate to be more effectively and rapidly utilized. When the situation warranted it, close-in strikes allowed COMUSMACV to utilize the destructive capability of B-52s in defending friendlies in close contact with the enemy. In this way, the B-52 had assumed a new role.

TURNPIKE (19 April - 24 June 1968)

Operation TURNPIKE was initiated on 19 April 1968 when the Seventh Air Force Southwest Monsoon Plan for Route Package I, TALLY HO, STEEL TIGER, and TIGER HOUND was augmented with ARC LIGHT forces by direction of COMUSMACV.^{33/} The overall objective was to stem the high rate of enemy infiltration into South Vietnam from North Vietnam and Laos.

The strategy involved restricting traffic through the LOC in Laos, thereby forcing the enemy to concentrate his traffic flow and truck storage areas. This was basically the same concept involved in the interdiction program against Point Golf which had commenced on 2 April 1968.^{34/} From 19 April to 3 May 1968, Tac air and ARC LIGHT strikes were used in an attempt to direct traffic away from the Mu Gia Pass route and into the Ban Karai Pass area, from Routes 15 and 911 to Routes 137 and 912 (Fig. 7). An analysis of this 15-day operation stated:^{35/}

"...the combination of tactical air interdiction efforts against vulnerable road segments on Route 911, south of Mu Gia and on Route 15, north of Mu Gia Pass, and the massive fire power of ARC LIGHT strikes against truck park, storage areas on Routes 911, 23A and 91B appear to have caused the enemy to divert the bulk of his traffic entering Laos from Mu Gia Pass road net to Routes 137 and 912."

Since this change of traffic had been verified by road watch teams and IGL00 WHITE sensor reports, the first objective, that of massing traffic on a single route, had been met. Also, an increased number of truck parks along Route 912 now made this area vulnerable for ARC LIGHT strikes which were to begin on 5 May.^{36/} From 4 to 8 May, B-52s struck truck park, storage areas, and AAA

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defenses along Routes 92, 912, 922, and 914B. By 8 May, air observations of the route south of the junction of 911C and 912A (Fig. 7) reported a continual decrease in enemy traffic. It was believed the ARC LIGHT disruption of truck parks had contributed materially to this reduced traffic flow.^{37/}

During this period, a problem arose which restricted effectiveness of ARC LIGHT in this area. As the 7AF DI stated in his report:^{38/}

"Because of continuing problems of target validation and the essential diversions of ARC LIGHT strikes to higher priority in-country targets, the level of coordination between Tac air road interdiction effort and ARC LIGHT strikes has not been realized to the degree originally desired."

This problem, combined with an increase in rainfall, decreased enemy traffic and restrictions on employment in RP I, led to a recommendation that the ARC LIGHT sortie rate be decreased from the original 30-42 to 18-39 sorties.^{39/} On 24 June 1968, Operation TURNPIKE was officially terminated.^{40/} Results are presented in Figure 8.^{41/}

Battle of Kontum-Operation PLATTSBURG (7 May - 14 June 1968)

After his defeat at Khe Sanh, and during Operation TURNPIKE, the enemy began moving southward to the western highlands of Kontum Province. As indications pointed, the enemy was planning a pincer movement from northwest and southwest focused on Dak To. The attack appeared to be planned for the middle or end of May when pre-monsoon, low clouds might reduce friendly air support. The fact that this major offensive did not occur was attributed largely to the B-52 strikes.^{42/}

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Between 15 April and 17 June, enemy units were hit by B-52s flying 911 sorties in 178 strikes and dropping 25,508 tons of bombs.^{43/} For 39 days an average of 23 sorties per day were flown, or 38 percent of the total B-52 effort for that period. As at Khe Sanh, the BUGLE NOTE concept was widely used.

By early June, the enemy had lost the capability to coordinate large-scale attacks, and unlike the attack in November 1967, the enemy threat dissipated "as the badly mauled enemy units returned without giving major battle."^{44/} In the Battle of Kontum, the B-52s' role was one of "preemption by fire."

Defense of Saigon (June-September 1968)

As the operation in Kontum Province was coming to a close, the major effort of the ARC LIGHT operation moved farther south into III CTZ. Whereas in May, 705 sorties were flown in II Corps as compared with 157 in III Corps, by the end of June there had been 964 sorties in III Corps and 425 in II Corps.^{45/}

In early June, enemy forces were refitting, training, and apparently preparing for another all-out offensive against Saigon. To counter the buildup, a program was developed utilizing B-52 strikes in a maneuver role. Purposes of this program were:^{46/}

- . Destroy enemy forces.
- . Interdict the infiltration of enemy fillers to hostile units that have been in contact in and around the CMD.
- . Destroy known base areas to deny the enemy the use of them for training, resupply, and rest.
- . Interdict resupply of food, equipment, and ammunitions.

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RESULTS OF OPERATION TURNPIKE

Date (1968)	Total Sorties	Avg Flown Per Day
19 April - 3 May	303	30.3**
4 May - 10 May	137	27.4
11 May - 17 May	84	16.2**
18 May - 24 May	42	21 **
25 May - 31 May	0	0
1 June - 7 June	0	0
8 June - 14 June	<u>60</u>	30 **
Total	626	

BDA - *

Trucks Destroyed - 2

Trucks Damaged - 0

Secondary Explosions - 308

Secondary Fires - 117

Road Cuts/Slides - 154

* See DIT to MACCOC, 16 Jun 68.

** No sorties were flown on these dates: 21, 22, 26, 27, 28 Apr 68; 11, 13, 18, 21, 22, 23, 24 May 68; 8, 11, 12, 13, 14 Jun 68.

FIGURE 8

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Enemy ralliers, prisoners, and propaganda indicated that 15-16 June was the most likely date for an attack on Saigon. This attack was to start simultaneously in the Long Binh/Bien Hoa area. Despite light contact throughout III Corps, the enemy refused to do battle. Friendly forces were sent out to locate and destroy the enemy forces prior to their entry into Saigon. Although the enemy refused to commit himself to a decisive battle, the friendly forces did locate assembly areas and supply routes. As rapidly as these areas and routes were located, B-52, tactical air, artillery, or Army gunships were called in.^{47/} During June, 13 different staging areas and infiltration routes were hit in 165 strikes.^{48/} Between 14 June and 1 July, 846 B-52 sorties dropped 28,481 tons of bombs on these targets.^{49/}

By the end of June, the Commanding General II Field Force Vietnam, and COMUSMACV believed the proposed June offensive by the enemy had been thwarted. As Gen. Creighton W. Abrams, Jr. stated:^{50/}

"Later intelligence reports indicate the planned June attacks have now been postponed and enemy forces are seeking safe areas in the western part of III Corps and in Cambodia."

The CG, FFV, was more specific when he stated a B-52 strike on 28 June had inflicted such serious damage on Subregion 5 headquarters and the base area, that the enemy planned to depart War Zone "D" after 1 July. Agents had also reported enemy units had not been receiving needed supplies and ammunition.^{51/} He concluded:^{52/}

"Numerous enemy have been killed, harassed, confused, and badly hurt throughout III CTZ and that

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enemy plans for the third phase offensive have been delayed. The fact that enemy forces have failed to attain their forecasted schedule can be credited in large measure to the destructive B-52 program just completed."

Although the immediate threat to Saigon had been successfully met, from July through October, a large percentage of the B-52 strikes remained in III Corps. The following figures show the percentage of the total B-52 effort expended in III Corps: July - 49 percent; August - 51 percent; September - 55 percent, October - 40 percent.

Operation THOR (1-7 July 1968)

A brief pause in the B-52 effort around Saigon occurred from 1 July to 7 July 1968 when a SLAM type operation took place in a portion of the Demilitarized Zone and lower Route Package I. The purpose of Operation THOR was to conduct a "carefully phased and integrated application of massed air, artillery, and Naval gunfire" on the Cap Mui Lay Sector (CMLS).^{53/} The NVA had strongly fortified the CMLS and were continually firing on Marine installations just across the DMZ. Heavy AA/AW and SAM fire made it extremely difficult for friendly air to direct counter fire. In addition, NVA coastal guns kept U.S. Naval ships 12 to 18 kilometers off shore.^{54/}

Operation THOR, as approved by COMUSMACV on 21 June, was planned in three phases.^{55/} Phase I was to consist of massive air bombardment of known enemy AAA, artillery, and shore batteries within the CMLS to cripple the enemy's capability to respond. The major role in this phase went to the B-52, with 60 sorties on "D" day and 54 on D plus 1.^{56/} Phase II was planned for D plus, 2, with 30 B-52 sorties on that day and 24 on D plus 3. The final phase was to consist of

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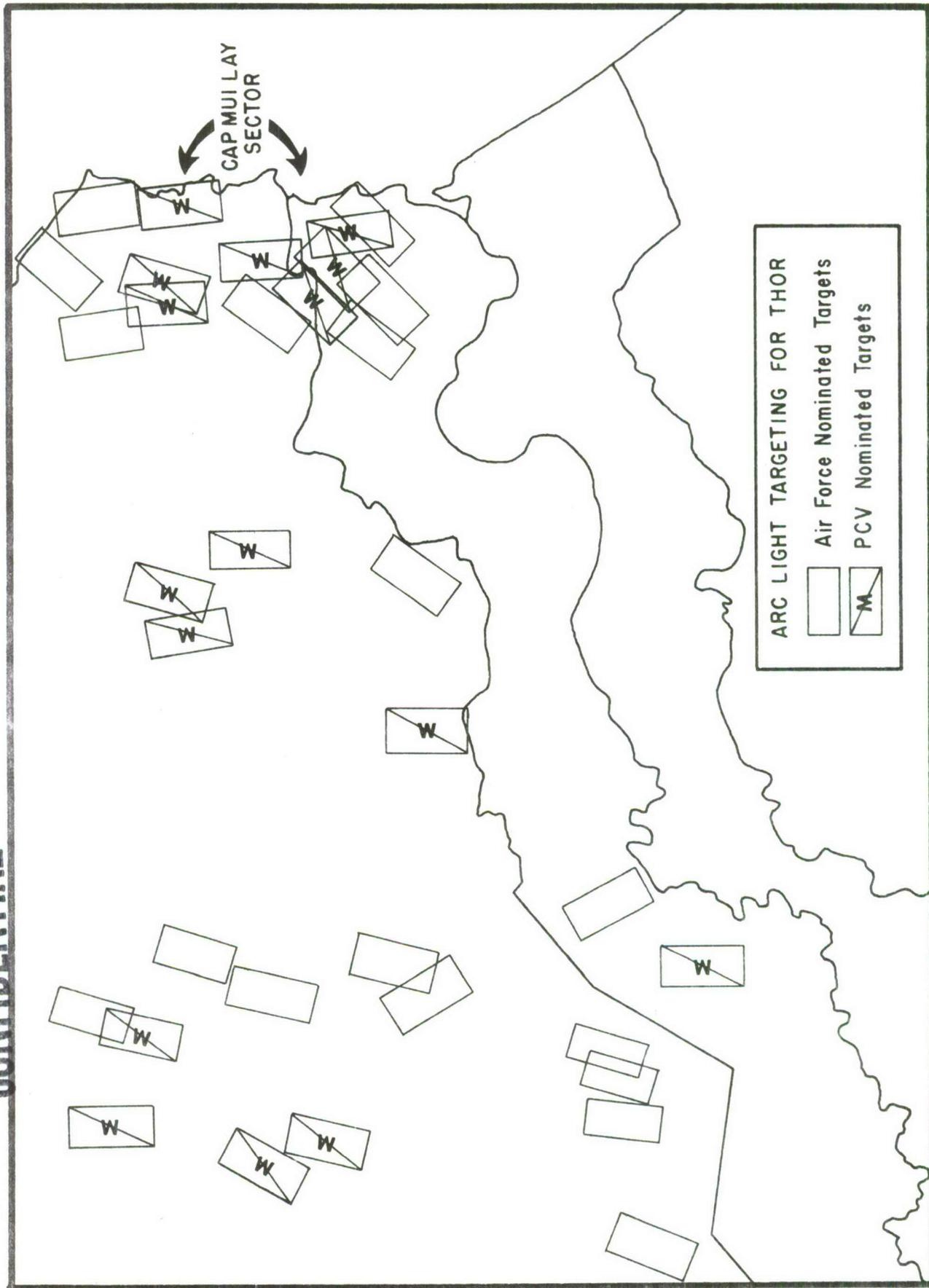


FIGURE 9

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integrated air, artillery, and Naval gunfire attacks to open the entire sector to aerial observation and destruction. Phases II and III were under the control of CG, Provisional Corps Vietnam (PCV).^{57/} Tac air, Naval gunfire, and Marine artillery were integrated throughout the three phases.

Figure 9 shows the location of ARC LIGHT strikes during this operation. Summarizing, 210 ARC LIGHT sorties were recorded; there were 122 secondary explosions; a total of 96 artillery positions were destroyed; and 309 AAA positions were destroyed.^{58/}

Operation THOR was considered a success by COMUSMACV, because the enemy lost a valuable sanctuary. Also, the successful integration of air, naval, and ground firepower was considered by COMUSMACV to be of equal importance. Finally although difficult to prove, if the enemy had planned to use the CMLS as a staging area for a major infiltration into the South, it was preempted.^{59/}

Ban Laboy (October 1968)

After Operation TURNPIKE, 7AF had formulated its summer interdiction campaign in Laos to counteract enemy plans for a late summer offensive. Tet and the May offensive had indicated the enemy preceded each offensive with a massive logistics buildup. The objective of the 7AF plan was to neutralize the enemy's capability to move supplies through Route Package I and to preempt his planned third offensive. To accomplish the first objective, traffic control points (choke points) were to be struck, causing the enemy confusion and delay, thus preventing him from maintaining a steady flow of supplies.^{60/}

Although this campaign continued throughout the fall of 1968, the B-52

effort was concentrated in the areas of Ban Karai and Mu Gia Passes and Ban Laboy Ford. In this report, only the operation against the Ban Laboy Ford is discussed because of its unique features.

The Ban Laboy Ford complex was located eight kilometers south of the Ban Karai Pass. It consisted of a prepared ford (main crossing), a cable bridge, and a cable ferry/pontoon bridge. These had been constructed to enable crossing of the Nam Ta Le River and comprised the only existing ways of crossing that river. From mid-May through mid-September, it was estimated that most of the 1800 trucks entering the area had crossed through this complex. Thus, the importance of the Ban Laboy Ford became apparent.^{61/}

On 18 September 1968, the campaign to destroy this complex commenced with 18 B-52 and 12 F-105 sorties. The pontoon bridge was destroyed and the cable bridge was rendered temporarily unusable. However, the main ford remained intact with only slight damage to the approach. From 20 September to 1 October, tac air continued to pound the ford without being able to destroy it. On 1 October, six B-52s, utilizing a bomb train of 780 feet, rather than the normal 4,500 feet, made a direct hit on the ford. The next day, twelve F-105s with twenty-four 2,000 lb. bombs completed the destruction of the ford. Thus, for the first time in three years the ford was closed.^{62/} Although efforts were made to repair it, continuous tac air and ARC LIGHT strikes prohibited successful completion.

On 12 October, ARC LIGHT sorties bombed truck parks and storage areas. Nine sorties on 16 October, again using a single aiming point, destroyed the repaired cable bridge and interdicted the ford and its approaches. Later B-52 strikes

PERCENT OF SORTIES BY CORPS AREA-1968

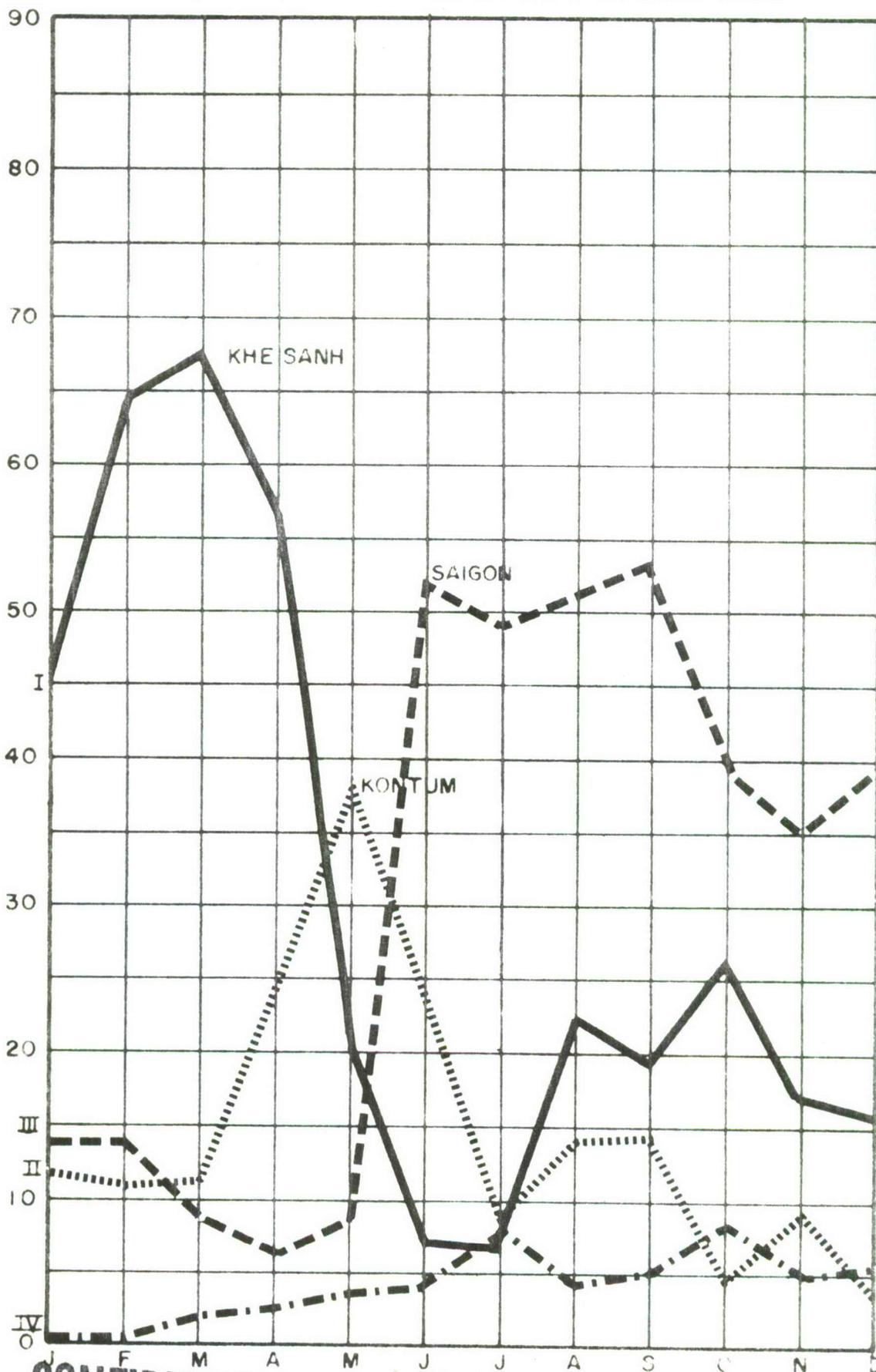


FIGURE 10

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hit road repair machines and storage areas. From 18 September to 26 October, B-52s flew 93 sorties against the complex.

As a result of closing the ford, the enemy undertook an extensive road building program to bypass the ford area and cross the Nam Ta Le farther west. This consumed much of the enemy's efforts and time.

Conclusion

Throughout 1968 the ARC LIGHT capability had provided the necessary punch to blunt major enemy thrusts toward military installations, key cities, and population centers. Enemy forces failed to attain their objectives in the Khe Sanh, Dak To (Kontum), and Saigon campaigns. During Operation THOR, as with Operation NEUTRALIZE in 1967, B-52s combined with tac air to successfully remove a threat to friendly positions along the DMZ.

Out-country, B-52s were utilized to destroy enemy supply and storage areas and infiltration routes. At the Ban Laboy Ford, B-52s interdicted a major enemy supply route with "pinpoint" bombing. All operations served to illustrate the great reliance placed on the B-52 in a wide variety of campaigns. (Apps I, II.)

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CHAPTER IV
EFFECTIVENESS

Since the first B-52 sortie was flown in Southeast Asia, numerous studies and reports using various sources have assessed the effectiveness of ARC LIGHT strikes. In all cases, facts and data on effectiveness which could be adequately evaluated were subject to the limitations of weather conditions, terrain, overhead canopy, and general inaccessibility--besides being difficult to quantify. Yet, statements of PWs and ralliers have attested to effectiveness of the B-52 in demoralizing and disrupting the enemy. During the summer and fall of 1968, the problem of B-52 effectiveness received renewed attention at the Secretary of Defense and JCS levels. On 15 April 1968, the Deputy Secretary of Defense directed a study be made of the "entire scope of the ARC LIGHT program, from target identification and validation procedures to assessment of results."^{1/}

Although the primary purpose of this study was to assess the ARC LIGHT program at various sortie levels to assist in determining what that level should be throughout 1968, the study also made key observations on ARC LIGHT effectiveness. Among these was the observation that although destruction and damage were an important end result, there were also many times when the objectives of ARC LIGHT strikes could be attained without material damage and destruction. The study also contained a statement that "no completely objective statistical measurement" could be found which would provide a "quantitative and definite assessment of the ARC LIGHT program."^{2/}

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On 15 July, JCS proposed that an ARC LIGHT Follow-On Study be conducted, and on 26 August 1968 further directed that a Preliminary Planning Conference be held to "develop a methodology for determining the effectiveness of ARC LIGHT operations."^{3/} This Preliminary Planning Conference was held in September 1968; some of the conclusions reached were:^{4/}

"The effectiveness of the ARC LIGHT program is keyed to the validity of pre-strike intelligence and the contribution that area bombing makes to the support of the field commander in the accomplishment of his ground mission."

"The only overall assessment of ARC LIGHT effectiveness is the ground force commander's subjective judgment."

In connection with these conclusions, a Target Description Format, an ARC LIGHT Objective Target Classification system, and a Commander's Estimate of ARC LIGHT Effectiveness report were developed. The results of the Preliminary Planning Conference were forwarded to CINCPAC, COMUSMACV, and CINCSAC with implementing instructions. However, when the ARC LIGHT Study Group visited MACV headquarters on 16-25 October 1968, it was determined that the time required to generate targets by the recommended Target Description Format was unacceptable. This format was withdrawn from further consideration.^{5/} Both the ARC LIGHT Objective/Target Classification System and the Commander's Estimate of ARC LIGHT Effectiveness Report were acceptable and placed in effect on 18 October 1968.

When target nomination messages were submitted to MACV, they were to include:^{6/}

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1. A statement of how the strike related to the Commander's overall objective.
2. A specific objective and broad classification of the target using the following designators:

<u>DESIGNATOR</u>	<u>OBJECTIVE</u>	<u>DESIGNATOR</u>	<u>CLASSIFICATION</u>
1	Interdiction	A	Base Camp/Training Area
2	Support		
3	Spoiling	B	Logistics Base
4	Harassment	C	Troop Concentrations/Operations Area
5	Other		
		D	Military Headquarters
		E	Infiltration Route
		F	Other

The weekly Commander's Estimate Report was to contain a brief narrative review of strikes during the period, and how they related to the Commander's objectives, including BDA.^{7/} As an example, in I Corps, there were 11 strikes conducted from 28 October to 1 November 1968. The purpose of six of these strikes was "to destroy bunker complexes, fortified villages, missile sites, truck parks, artillery positions, and AA/AW positions."^{8/} Although aerial observation did not determine the damage to structures in three of the boxes, it was "believed these strikes achieved their objective because of the destruction of large quantities of ammunition and/or flammable material."^{9/}

The objective of the other five strikes was "to destroy large troop concentrations believed to be elements of the K-5 and K-6 Battalions of the 812th NVA Regt. These strikes were considered vital to the withdrawal of the 1st Cav Div from the base area 101, as well as the introduction of the 1st ARVN Div to this area. Since the "switch" took place successfully, this objective was

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accomplished.^{10/}

Two strikes were directed during this period, and they effectively neutralized one of the large areas being used by enemy artillery and infantry elements harassing the Ben Het area.^{11/} The CG also stated a belief that "the majority of enemy units shifted to the west in an attempt to avoid other strikes. All bombs were on target and effectively neutralized 90 percent of the target area."^{12/}

The III Corps CG reported on the 35 strikes in his area whose main objective was to disrupt the enemy's buildup for a potential offensive. In all cases, the commander believed the strikes had been successful. For the three strikes in IV Corps, the senior adviser stated the strikes were effective and his objective had been achieved.^{13/}

When the Follow-On Study Conference convened in November 1968, the members had already visited Southeast Asia and reviewed first hand the entire ARC LIGHT program. The report resulting from this conference provided a significant, perhaps the best, resume of ARC LIGHT effectiveness. Having reviewed a wide variety of data, the study group identified that which was of little value versus that which was deserving of further exploitation as a better means of measuring effectiveness. When new data from the field had been collected in sufficient quantity, the new method was to serve as a basis for continuing analysis of the ARC LIGHT program. The report concluded:^{14/}

"The most important expression of ARC LIGHT effectiveness is the subjective judgment of how well ARC LIGHT strikes fulfill the commander's objectives. All quantitative measurements are dwarfed by the importance the commander assigns to ARC LIGHT in its role of contributing to the success of the ground campaign."

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"In essence, the effectiveness of ARC LIGHT strikes cannot be measured solely by quantitative bomb damage assessment (BDA). Often, the only "visible" BDA is a permissive environment in which friendly forces conduct operations, or enemy attacks which were spoiled, or a reduced flow of enemy troops and supplies to the battle area. In reality, these may be the best measures of effectiveness of the ARC LIGHT program."

Effectiveness and Psyops Bomb

With the increased indications that B-52 strikes were causing fear, low morale, and desertion among the enemy, COMUSMACV desired the Psyops Division institute a program to exploit the enemy's psychological vulnerability after B-52 strikes. ^{15/} The method adopted was to follow each B-52 strike in SVN with a leaflet/loudspeaker operation. The objective was to: ^{16/}

- . Reinforce the fear producing effects of the B-52.
- . Create a spoiling effect on impending enemy operations.
- . Lower morale and encourage malingering, desertion, or defection of enemy personnel.
- . Create friction between Communist cadres and soldiers.

This program was implemented in October 1968; however, by mid-December 1968 problems developed. Frequently, it was impossible to follow an ARC LIGHT strike within four hours, because the light psyop aircraft had no radar navigation equipment, could fly only in daylight hours, and was often grounded due to weather conditions. As a result, many B-52 strikes were not being exploited by the method originally envisioned.

To correct this situation, COMUSMACV recommended on 22 December 1968, an immediate and automatic psyop leaflet exploitation program be accomplished by

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LEAFLET TRANSLATION

LEAFLET NUMBER: 147-66-R

LEAFLET THEME:

LANGUAGE: VIETNAMESE

SIZE: 6X3 (H&W)

PAPER WT: 20 lb

DISSEMINATION: VO-2.5; RT/TO-1.11

FRONT:

Do not wait until this exhibition returns.

BACK:

You have been warned before, these aircraft will come back to give quick death, you all do not have much time to make another choice.

Follow the example of the 70,000 citizens that have used the Safe Conduct Pass and returned to a better life full of peace; or stay here for death, heartbreak, and sudden danger.

Those people who stay will never know when the bombs will fall. Be smart, don't delay again. Use the Safe Conduct Pass of the Republic like the one printed on this leaflet and quickly return to the just cause.

#147-66-k

Như đã loan báo trước đây, cho đến lúc phi cơ trở lại để gieo chết hóc, các bạn sẽ chẳng còn bao nhiêu thời giờ để lựa chọn nữa.

Hãy noi gương 70 ngàn đồng bào đã sử dụng Giấy Thông Hành và trở về lập lại cuộc đời ấm no thanh bình; hoặc ở lại để chết trong đau thương và nguy hiểm khủng khiếp.

Những người ở lại sẽ chẳng bao giờ biết được khi nào những trái bom khác sẽ rơi. Hãy khôn ngoan và đừng chần chừ gì nữa! Hãy sử dụng Giấy Thông Hành của Chính Phủ in trong truyền đơn này và gấp trở về với Chính Nghĩa.



147-66-R

ĐỪNG ĐỢI ĐẾN KHI CẢNH NÀY TÁI DIỄN

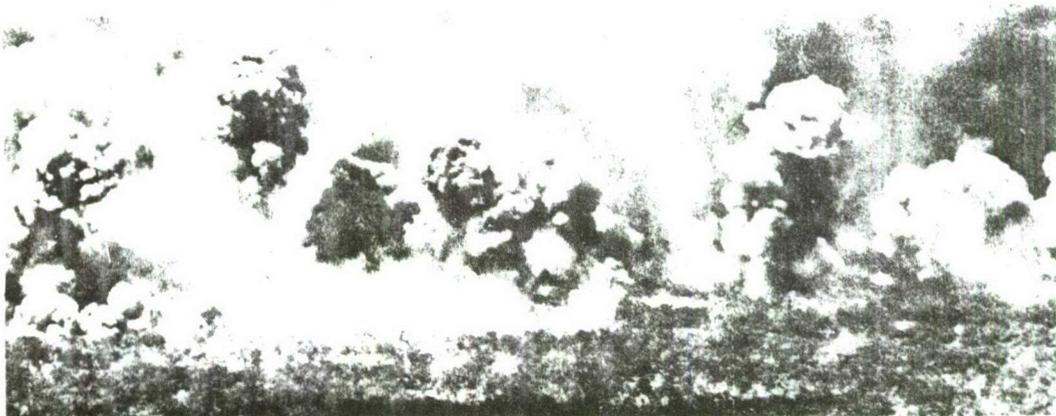


FIGURE 11

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LEAFLET TRANSLATION

LEAFLET THEME: B-52

LEAFLET NUMBER: 146-66-R

LANGUAGE: VIETNAMESE

SIZE: 6x3 (RW)

PAPER WT: 20 lb

DISSEMINATION: VO-2.5; RT/TO-1.11

FRONT:

(Picture of B-52)

BACK:

THIS IS THE MIGHTY B-52

Now you have experienced the terrible rain of death and destruction its bombs have caused.

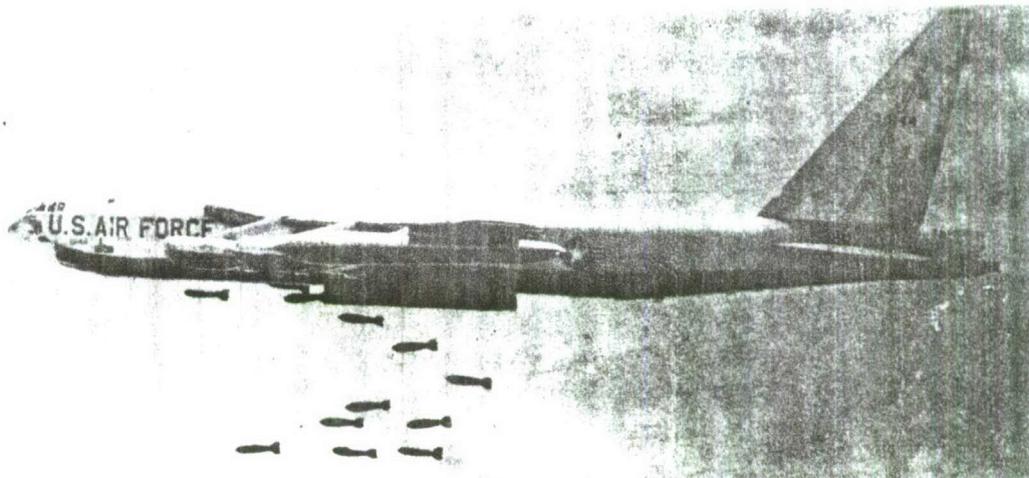
These planes come swiftly, strongly speaking as the voice of the government of Vietnam proclaiming its determination to eliminate the VC threat to peace.

Your area will be struck again and again, but you will not know when or where. The planes fly too high to be heard or seen. They will rain death upon you again without warning.

Leave this place to save your lives. Use this leaflet or the GVN National Safe Conduct Pass and rally to the nearest government outpost. The Republic of Vietnam soldiers and the people will happily welcome you.

(Picture of Safe Conduct Pass)

#146-66-R



ĐÂY PHÓNG PHÁO CƠ KHÔNG LỘ B.52

Các bạn đã trải qua những trận mưa bom khủng-khiếp gieo chết-chóc và tàn-phá. Vùng các bạn ở còn bị oanh-tạc nữa, nhưng các bạn sẽ không bao giờ được biết là vào lúc nào. Các phi-cô sẽ bay thật cao, không thể nghe thấy và trông thấy được. Nó sẽ còn gieo chết-chóc cho các bạn mà không báo trước. Hãy rời-bỏ ngay khu-vực này để tự-cứu lấy tính-mạng. Hãy sử-dụng truyền đơn này hay Giấy Thông-Hành của Chính-Phủ quốc-gia để đến tiền đồn gần nhất của Chính-Phủ. Đồng-bào và quân-nhân của Chính-Phủ Việt-Nam Cộng-Hòa sẽ hân-hoan đón-tiếp các bạn.



FIGURE 12

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having one B-52 in each three-ship cell carry one M129E1 leaflet bomb. This would not only insure immediate exploitation, but the 50,000 leaflets then being dropped could be trebled in the process.^{17/}

CINCPAC approved the idea and forwarded the request to CINCSAC for comment and feasibility determination.^{18/} CINCSAC also agreed to combining leaflet dissemination with B-52 ARC LIGHT strikes, and directed the 3d Air Division to coordinate directly with COMUSMACV to work out the details.^{19/} The 3d Air Div accepted the overall concept with certain restrictions:^{20/}

- . Leaflet dissemination would be used only on strikes in SVN.
- . Strike request would include authorization or non-authorization for the M129E1 bomb.
- . Missions which had an M129E1 bomb loaded would not be inflight diverted to target outside SVN. This was necessary, because the entire external load could not be released without releasing the M129E1.

These restrictions were acceptable to COMUSMACV, and on 1 April 1969 the program was placed in effect.^{21/} In early July 1969, COMUSMACV temporarily suspended use of the M129E1 bomb. Translated copies of the leaflets utilized are shown in Figures 11 and 12.

Effectiveness and Security

During the war in Southeast Asia, one of the great advantages enjoyed by the United States and its Allies was control of the air over South Vietnam. This allowed airstrikes to be directed to any point, subject to restrictions resulting from Rules of Engagement. In addition, the B-52 had another distinct

advantage over tactical air--complete surprise. Flying at altitudes above 20,000 feet, B-52 strikes did not provide the enemy advance warning until the bombs actually began falling. The psychological impact of these "surprise" attacks was attested to time and time again by PWs. Also, the physical destruction and kill ratio were extremely high when enemy troops were "caught" in the open. This "surprise" element became a "key" to B-52 success and effectiveness.

As early as January 1968, interrogation reports and other sources indicated the enemy was receiving advance notification of B-52 strikes. Investigations were conducted, such as Purple Dragon, and reevaluations of operations and communications were made. Because of the sensitivity and classification of these investigations, the conclusions were not obtainable. However, some of the changes made in airborne operational and communications procedures were available.

On 2 June 1968, JCS directed CINCPAC to examine operational security.^{22/} During the course of the examination, three activities and actions were identified as possible sources through which the enemy could gain information of ARC LIGHT strikes. These sources were F-105 support (IRON HAND), EB-66 ECM support (Tiny Tim), and Heavy Artillery Warnings.^{23/}

F-105s supporting B-52 aircraft on missions in SAM-threat areas were staged out of Takhli and Korat RTAFBs. These aircraft proceeded directly from their bases to the refueling areas, Peach or Cherry. After refueling, the F-105s contacted Cricket Control and gave their call signs, positions, and mission numbers. Only mission numbers in the 700s were currently used for the support of ARC LIGHT missions, and the "checking in" with Cricket Control approximately

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55 minutes prior to TOT constituted a potential advance warning of an ARC LIGHT strike.^{24/}

Two or three EB-66s established orbits perpendicular to the ingress/egress routes of the B-52 approximately 30 minutes prior to TOT. Triangulation of these orbital tracks disclosed the location of the target and probable ingress/egress routes of the B-52s. Also, refueling procedures of the EB-66s were considered too standardized.^{25/}

Although F-105 and EB-66 support was not provided on all ARC LIGHT missions, Heavy Artillery Warnings were always issued, and therefore could have been a more consistent source of information. Heavy Artillery Warnings were transmitted in the clear from GCI sites and DASCs to insure friendly aircraft were clear of the B-52 target area. These transmissions began five minutes prior to the "no-bombs-before" time (which was 20 minutes prior to TOT), and continued every 10 minutes until the last TOT. This warning contained the center UTM of the target box and the tactical air navigation (TACAN) Radial and Distance sent out by Seventh Air Force TACPAL in an Activity Message. (See Chapter II.) The transmission also informed all aircraft to remain clear of this point by five nautical miles.^{26/} Since the "no-bombs-before" time was 15 minutes prior to TOT, any enemy monitoring this message would have 20 minutes warning.

CINCPAC passed these evaluations to Seventh Air Force, and requested that operational/communications patterns and procedures be reviewed as potential operational security "leaks." On 11 October, 7AF informed CINCPAC of several changes in procedures. To preclude the enemy from obtaining the exact target location from the Heavy Artillery Warning, a system was devised in which TACPAL

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randomly selected a false target for each true target. This false target was located within five nautical miles of the true target and passed to the GCI sites and DASCs via the TACPAL Frag Order. Five minutes before the "no-bombs-before" time, a Heavy Artillery Warning was passed as before, but with the false targets, center UTM, and radial distance. Aircraft were advised to remain clear of this false point by 10 nautical miles.^{27/} The true target information was still relayed to the units by the Activity Message and contained the same information as before. All 7AF flying units received the Activity Message and therefore knew the true target. Any other aircraft flying in the B-52 target area would be clear of both the true and false target by the Heavy Artillery Warning since the 10-NM buffer also included the true target.^{28/} With the new system both the security and safety requirements were realized.

Seventh Air Force admitted existing F-105 operations did forewarn the enemy 25 to 30 minutes before pending B-52 strikes, but doubted that the specific target area could be identified.^{29/} The operating procedures in effect were considered necessary to provide optimum defense for the B-52s, and thus had to be retained. To preclude the enemy from knowing which F-105 was supporting a particular ARC LIGHT strike, random mission numbers were used.^{30/} Existing EB-66 operational procedures were also considered necessary, except that the established orbit was reduced from 30 minutes before TOT to 15.^{31/}

Although airborne and ground operational and communications procedures have been improved, the existence of advance notification of B-52 strikes still exists. PW interrogation reports still refer occasionally to having received advance warnings. Continuing efforts are being made to eliminate this

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problem. However, in an operation such as ARC LIGHT, standardization leads to stereotyped practices, which, in turn, opens the door to potential analysis by the enemy.

Effectiveness and SALOAs

The ARC LIGHT operation in Laos never received the percentage of B-52 effort applied in-country, except during November and December 1968. Only during Operations TURNPIKE and COMMANDO HUNT had any large percentage of the available ARC LIGHT force been utilized in Laos. In the case of Operation TURNPIKE, in-country emergencies and validation problems greatly restricted the use and effectiveness of B-52s. Validation was partially solved with the development and acceptance of Special ARC LIGHT Operating Areas (SALOAs). The other limitation, in-country priorities, continued to exist.

The primary objective of B-52 operations in Laos was to stem the flow of supplies and munitions along enemy LOCs. The ability of the B-52 to saturate large areas made it an ideal weapon for truck park and storage area targets. The Headquarters, Seventh Air Force, ARC LIGHT Target Planning Branch (DITT), was the primary out-country ARC LIGHT targeting agency nominating targets to MACV.^{32/} Because of the sensitive nature of ARC LIGHT operations in Laos, stringent Rules of Engagement and close coordination between Seventh Air Force, MACV, CINCPAC, and the Ambassador in Vientiane were necessary. However, as one Target Strike Analyst stated, "Effective destruction of target areas is only possible, if the strikes against these targets are executed in a timely manner in response to the most recent intelligence available."^{33/} This was not possible with procedures in effect through the summer of 1968.

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The difficulty stemmed from the time consumed in constructing a target box (usually 1 by 2 km), nominating the target, and waiting for approval. Before an individual target box could be hit, clearly defined steps had to be followed. Initially, all available intelligence information was collected and analyzed. A 1-by-2 km box was then drawn around the area to be struck. Photography of the area was then required to verify no shrines, temples, national monuments, or places of worship existed within one kilometer of the box. Also, all huts and villages within one kilometer had to be destroyed or abandoned, or show signs of supporting enemy military activities. Two PI readouts were accomplished before a request for validation could be forwarded. The validation request was then sent to MACV for reverification of the PI readouts. From MACV, the request was sent to AMEMB, Vientiane, and the photos were again reverified. Also a determination was made by Vientiane as to whether there were any friendly forces, usually Road Watch Teams or suspected PW camps, within three kilometers of the target area. If this validation were successfully completed, then a target box could be nominated for strike to MACV. This time-consuming process could require 15 days. Since this process was necessary for each target box, the chance of striking a perishable and fleeting target was small.^{34/}

This problem was especially perplexing during Operation TURNPIKE. Therefore, on 24 September 1968, a conference was held at Udorn RTAFB, with representatives from MACV, 7AF, 7AF/13th Air Force, AIRA Vientiane, and AMEMB, Vientiane in attendance. Out of this conference came the Special ARC LIGHT Operating Areas, which were first designated in October 1968. A SALOA was an enlarged, pre-validated area which contained numerous ARC LIGHT target boxes. Although the initial validation of a SALOA required the same validation procedure as did

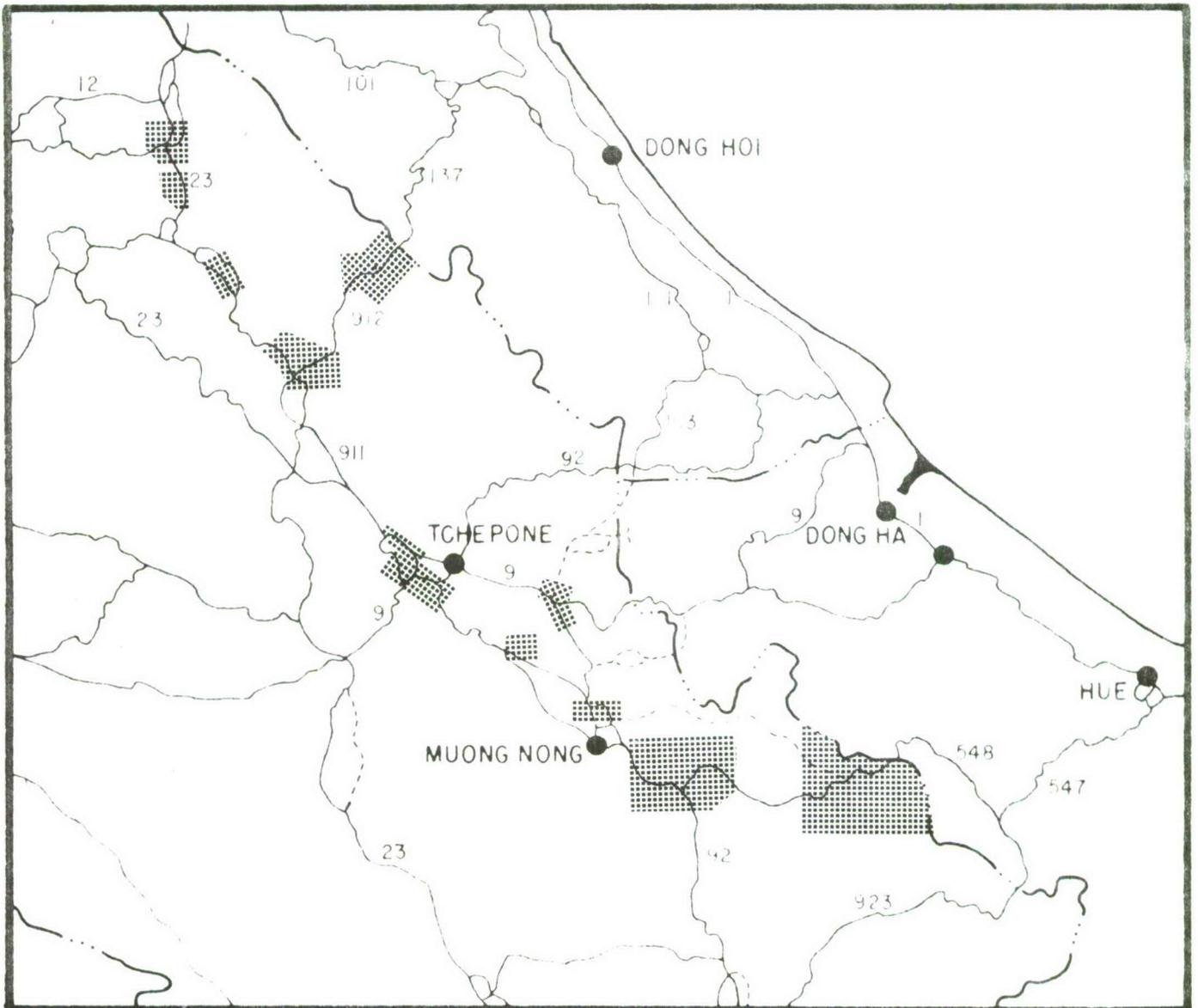
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SPECIAL ARC LIGHT OPERATING AREAS (DECEMBER 1968)

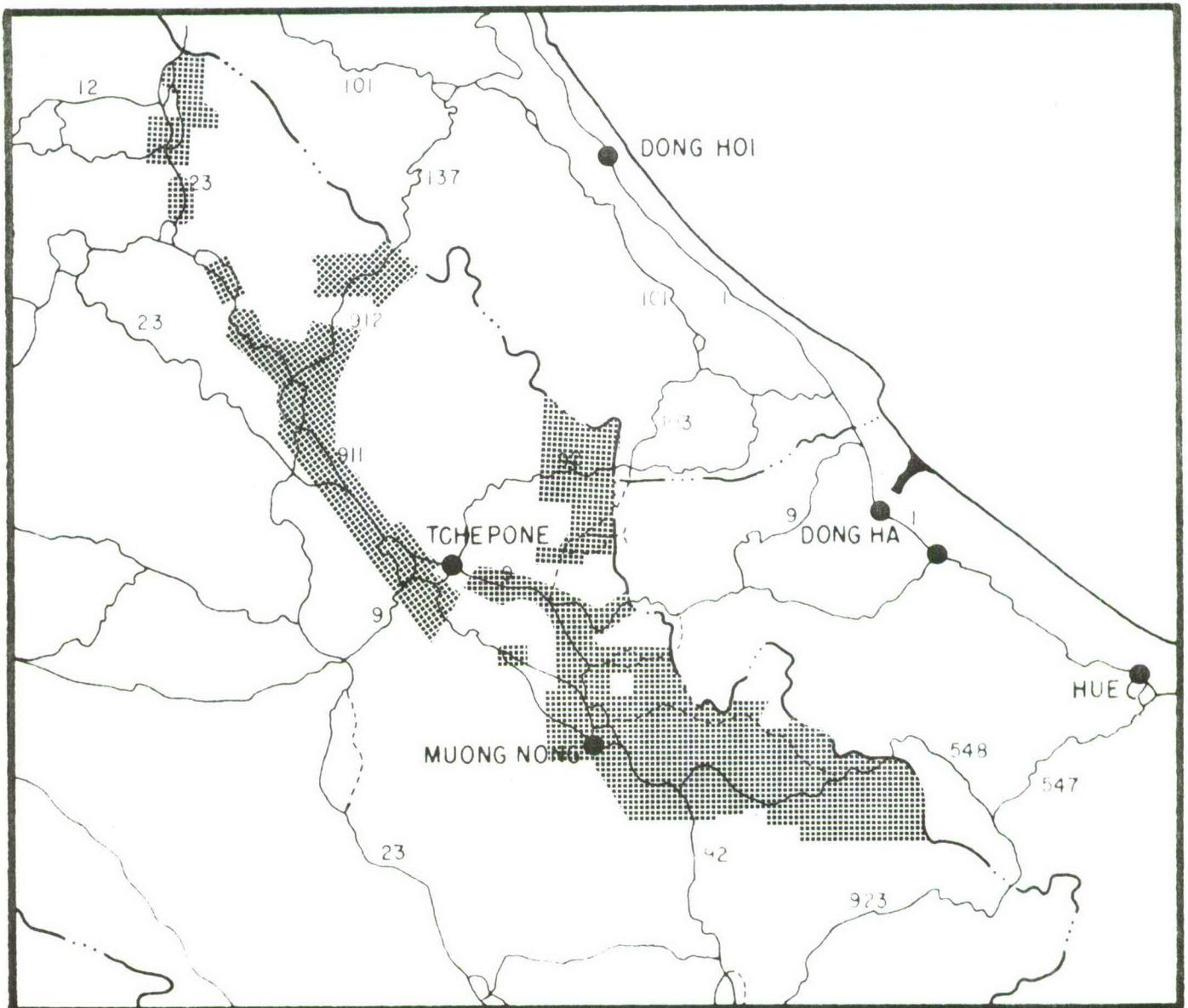


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FIGURE 13

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SPECIAL ARC LIGHT OPERATING AREAS (JUNE 1969)



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a box, the area involved was greatly enlarged, thus permitting greater flexibility within a SALOA. Authority was subsequently obtained to divert from one target to another within a SALOA, further increasing flexibility.^{35/}

The system was further streamlined in June 1969, when PI readouts were accomplished simultaneously at Seventh Air Force and Vientiane. However, the size of a SALOA required a long "read" time.^{36/} When one was validated, a strike could be made within a SALOA by nominating it to MACV, with a 24-hour notice to Vientiane. Authority was granted in January 1969 to divert a scheduled B-52 mission from one validated SALOA to another, if notification went to Vientiane not later than three hours before TOT.^{37/} Figure 13 shows the SALOAs existing in December 1968. By June 1969, the number and size of the SALOAs increased (Fig. 14). Although development of SALOAs increased the effectiveness of B-52 operations in Laos, problems still existed. Personnel involved with developing targets in Laos indicated the placement of Road Watch Teams in and around SALOAs resulted in curtailment and realignment of critical strike-approved areas. It was believed that information obtained by these teams was more readily available from IGLOO WHITE sensors and VR from FAC and SCAR aircraft. As the Chief of Validation and Research Branch stated:^{38/}

"The history of ARC LIGHT target nominations within Laos has been fraught with time delays, restrictions, archaic procedural process, and communications problems. It would be far simpler to determine what can be done rather than what cannot be done. Consequently, it would be much more practicable to establish the major military regions of Laos as one large SALOA with realistically chosen restricted areas carefully built around all structures or locations which prohibit operations under required Rules of Engagement."

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Effectiveness and MSQ

As the U.S. committed large air resources in Southeast Asia, an all-weather bombing capability became necessary, and with the advent of B-52 bombing, the limited number of suitable geographic offset aiming points (OAPs) accentuated the need. In 1965, SAC proposed utilizing the Radar Bombing Scoring equipment as a ground directed bombing system. Tests were conducted in late 1965, and in early 1966 the first MSQ system was deployed to SEA. Since that time, it has been used extensively in support of air operations. ^{39/}

On 2 June 1967, Detachment 15, 1st Combat Evaluation Group, was established at Tan Son Nhut. ^{40/} Det 15 was responsible to Seventh Air Force and the 1st Combat Evaluation Group for providing supervision, standardized operational procedures, and coordinating logistical support requirements for all COMBAT SKYSPOT sites. Its mission, and that of the seven operating locations (OLs), was to conduct all-weather, day and night close air support of friendly ground forces, harassment of enemy forces, interdiction of routes and lines of communications, and saturation bombing of known enemy troop concentrations and staging areas. ^{41/} The combination of BUGLE NOTE and MSQ-directed releases at Khe Sanh was considered one of the turning points in that campaign. (Chapter III). The increased utilization of COMBAT SKYSPOT (MSQ) can be seen from utilization statistics. MSQ directed 660 ARC LIGHT bomb releases in 1966, 3,699 in 1967, and 16,465 in 1968. ^{42/}

The "heart" of the MSQ system was the seven OLs. These OLs were strategically located throughout Southeast Asia (Fig. 15). They directed various types of aircraft for precision, and controlled releases of ordnance within a

COMBAT SKYSPOT

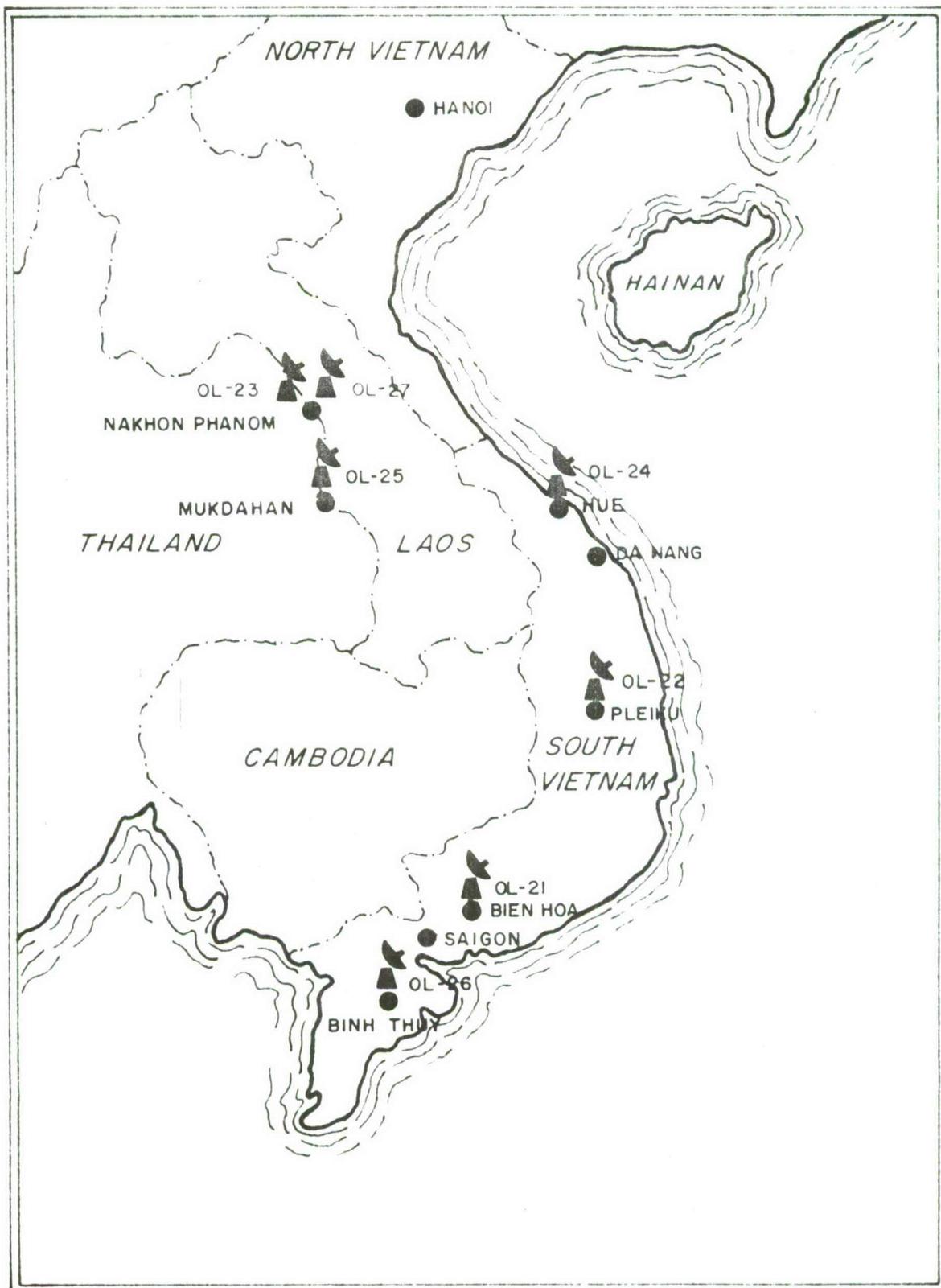


FIGURE 15

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theoretical range of 197 nautical miles from any OL, regardless of atmospheric conditions. The exact point for a bomb release was determined by a computer-linked automatic tracking radar station. In the case of a B-52 strike, the aircraft departing from any of the three bases (Andersen, Kadena, or U-Tapao) flew to a fixed preinitial point (PIP) and Initial Point (IP) and checked in with the appropriate OL. From this time until release of the bombs, the B-52 remained under the direction of the OL. Upon reaching the target area, the OL directed the first aircraft of the cell over the target by voice control. At the desired point of release, the OL relayed a "Hack" to the crew, and the bombs were released.^{43/}

The capability of the MSQ system to direct B-52s to a target irrespective of weather conditions enabled the ARC LIGHT program to be more effective. The offset aiming point method of bombing was extremely difficult and limited, because of the lack of accurate maps and necessary geographic aiming points. The MSQ system overcame this difficulty.

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EPILOGUE

COMUSMACV's evaluation of the ARC LIGHT program as he reported it to
CINCPAC in October 1968 follows: ^{1/}

"COMUSMACV retains these sorties under centralized control for concentrated use as needed. This gives COMUSMACV the means for influencing the battle without a constant shift of major troop units. In the classical sense, he 'releases his reserve' to his subordinate commanders, always having the reserve instantly reconstituted in a matter of hours by the upcoming B-52 sorties which can be used in the same or other areas. All strikes are tied directly to a specific situation on the ground, i.e., in direct support of ground operations by friendly troops, or specific interdiction targets. All requests for B-52 strikes (except those from the Seventh Air Force) originate with ground commanders who use all intelligence means at their disposal, i.e., people sniffers, long-range patrols, radar fixes, PW interrogation, agents' reports, and other higher classified means, to determine their targets. Commanders then select targets in accordance with their planned maneuvers. These target selections are then forwarded to COMUSMACV as recommended targets. Seventh Air Force target recommendations are made after extensive aerial photo interpretation, visual reconnaissance, and other higher classified means. Upon receipt of all target recommendations at MACV, three general officers review all targets recommended (including those by Seventh Air Force) and, after studying all available intelligence and the ground situation, recommend priorities to COMUSMACV. Five targets are selected twice daily (total 10). Since June 1968, an average of 26 target nominations were received for each selection period.

"The restriction on the bombing of North Vietnam and Cambodia has permitted the enemy to move his supply bases even closer to the battle area and debouch quickly for attacks against friendly outposts lightly held. COMUSMACV has been able to meet this tactic quickly with B-52 strikes which are followed up by ground attacks. In one instance, where no ground forces were available (NW Kontum Province), the enemy was stopped by repeated B-52 strikes alone. Every time the enemy is found massing anywhere within South Vietnam, he is hit in this way. The B-52 used in this manner under centralized control becomes

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a tool of such effectiveness that the theater commander has no possible substitute within the conventional arsenal. Without B-52 sorties the theater commander would need more ground troops to achieve the results obtained since initiation of this B-52 concept. This concept has been so effective that ground commanders' requests for B-52 strikes continue to exceed available sorties.

"In summary, the B-52s are the theater commander's reserve, his artillery, his interdiction tool, his means for influencing the battle, and in some instances his only means for meeting the enemy immediately upon discovery, e.g., the engagement in NW Kontum Province."

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FOOTNOTES

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37. (S) Msg, MACV, CND to JCS, "B-52 Sortie Rate", 1 Dec 68.
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41. (S) Msg, JCS, 8024, 19 Dec 68.
42. (S) Msg, SAC to CINCPAC, "B-52 Sortie Rate", 19 Dec 68.

43. (S) Msg, CINCPAC to JCS, "ARC LIGHT Sortie Rate", 3 Jan 69.
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51. (S) Msg, CINCPAC to CINCPACAF, CINCPACFLT, COMUSMACV, "ARC LIGHT Sortie Rate", 19 Jun 69.
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55. Ibid.
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57. (S) Msg, CINCPAC to JCS, "ARC LIGHT Sortie Rate", 22 Jun 69.

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2. (S) Msg, CG, II FFV to MACV J-3-073, "ARC LIGHT Nomination", 120910Z Jun 69;
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3. Ibid.
4. Ibid.
5. (S) Msg, COMUSMACV to CINCPAC, 15 Oct 68.

6. (S) MACV Directive 95-14, 3 Jul 68.
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APPENDIX I

SORTIES PER MONTH BY AREA - 1968

AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
LAOS	243	164	163	326	445	129	187	6	78	271	654	685	3351
NVM	9	0	0	0	6	0	263	59	47	88	-	-	472
DMZ	23	0	35	9	78	58	42	84	6	12	-	-	347
I	401	936	1266	1004	404	135	133	415	333	493	247	294	6060
II	109	157	204	294	705	425	154	263	257	95	160	49	2890
III	127	200	161	111	157	964	875	935	985	755	628	724	6647
IV	0	0	20	42	60	66	146	80	87	141	92	102	853
TOTAL	912	1457	1849	1786	1855	1777	1800	1842	1793	1855	1781	1854	20,620

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APPENDIX II

MONTHLY % OF TOTAL ARC LIGHT EFFORT BY AREA -1968													
AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVER
LAOS	27	11	9	18.2	24	7.2	10	1	4	15	37	37	16
NVM	1	0	0	0	.3	0	15	3	3	5	-	-	2
DMZ	2	0	2	.5	4.2	3.2	2	5	1	4	-	-	2
I	44	64	67	56.8	22	7.6	7	22	19	26	17	16	30
II	12	11	11	16.5	38	23.9	9	14	14	5	9	3	14
III	14	14	9	6.2	8.5	54.2	49	51	53	40	35	39	32
IV	0	0	2	2.4	3.2	3.7	8	4	5	8	5	5	4

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GLOSSARY

AA/AW	Antiaircraft/Automatic Weapons
ACS	Assistant Chief of Staff
AIRA	Air Attache
AMEMB	American Embassy
ARVN	Army of Republic of Vietnam
ASAP	As Soon As Possible
BDA	Bomb Damage Assessment
CG	Commanding General
CIA	Central Intelligence Agency
CINCPAC	Commander-in-Chief, Pacific Command
CINCPACFLT	Commander-in-Chief, Pacific Fleet
CINCSAC	Commander-in-Chief, Strategic Air Command
CMD	Capital Military District
CMLS	Cap Mui Lay Sector
COMUSMACV	Commander, U.S. Military Assistance Command, Vietnam
CS	Chief of Staff
CTZ	Corps Tactical Zone
DASC	Direct Air Support Center
DEPSECDEF	Deputy Secretary of Defense
DMZ	Demilitarized Zone
ECM	Electronic Countermeasure
FAC	Forward Air Controller
FFV	Field Forces Vietnam
FY	Fiscal Year
GCI	Ground-Controlled Intercept
GVN	Government of Vietnam (South)
IP	Initial Point
JCS	Joint Chiefs of Staff
KM	Kilometer
LOC	Line of Communications
MACV	Military Assistance Command, Vietnam

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UNCLASSIFIED

NKP	Nakhon Phanom
NM	Nautical Mile
NSA	National Security Agency
NVN	North Vietnamese
NW	Northwest
OAP	Offset Aiming Point
OHC	Overhead Cover
OL	Operating Location
PACAF	Pacific Air Forces
PCV	Provisional Corps Vietnam
PIP	Pre-Initial Point
Psyop	Psychological Operations
PW	Prisoner of War
RTAFB	Royal Thai Air Force Base
RTG	Royal Thai Government
SALOA	Special ARC LIGHT Operating Area
SAM	Surface-to-Air Missile
SCAR	Strike Control and Reconnaissance
SEA	Southeast Asia
SIOP	Single Integrated Operations Plan
SLAM	Seek, Locate, Annihilate, and Monitor
SVN	South Vietnam
SW	Southwest
TAC	Tactical
TACAN	Tactical Air Navigation
TDY	Temporary Duty
TFA	Task Force Alpha
TOT	Time Over Target
UTM	Universal Transverse Mercator
VC	Viet Cong
VR	Visual Reconnaissance
WAIS	Weekly Air Intelligence Summary