

Operation LINEBACKER II: A Retrospective

PART 4: Strategic Assets and Micromanagement -Vietnam 1965 – 1972

With an Introduction to the Series

SAC – LSU Shreveport

*Report of the LSU Shreveport unit
for the SAC Symposium, December
2, 2017*

*Gary D. Joiner, PhD.
Ashley E. Dean*

*Prepared for
The Strategy Alternatives Consortium
Lt. General USAF, (ret.) Robert J Elder, Jr.
President/Founder*

STRATEGY ALTERNATIVES CENTER

The project was made possible through Louisiana State University in Shreveport, which provides salaries for researchers, office space, equipment, and technical support. LSU Shreveport also provides assistance with graduate student positions as needed. Additionally, the project is made possible through the assistance and mentoring of the Strategy Alternatives Consortium. The statements made and views expressed are solely the responsibility of the author(s).

SAC - LSU Shreveport is a unit of Louisiana State University Shreveport.

© Copyright 2017 SAC – LSU Shreveport

All rights reserved. No part of this work may be reproduced in any form by any electronic or mechanical means (including photocopying, recording, or information storage and retrieval) without permission in writing from SAC – Shreveport.

Published 2017 by SAC – LSU Shreveport
One University Place
Shreveport, LA 71115

TABLE OF CONTENTS

Quotes	i
About the Authors	iii
Preface	iv
Abbreviations	v
List of Figures and Tables	vii
Part 1: Series Introduction	1
Part 1 Bibliography	3
Part 4: Strategic Assets and Micromanagement -Vietnam 1965 – 1972	4
Part 4 Bibliography	29

QUOTES

Every SAM in Hanoi went off—just a fantastic barrage of SAMs!...and then the bombs started to hit...It was a continuous din of noise and shaking of the ground...We had a panoramic view over the courtyard roof of the prison...You could see the flashes of explosions on the overcast... they just keep coming and kept coming!...a constant barrage of sound, flash, and concussion...An awesome display of power...We were just pasting hell out of them for the first time.¹

Capt Bob Lilly, Prisoner-of-War (POW), 1965-1973

The first few times I experienced a B-52 attack it seemed, as I strained to press myself into the bunker floor, that I had been caught in the Apocalypse. The terror was complete. One lost control of bodily functions as the mind screamed incomprehensible orders to get out.²

The Viet Cong Minister of Justice Truong Nhu Tang

At the heart of warfare lies doctrine. It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is the building material for strategy. It is fundamental to sound judgment.

General Curtis Emerson LeMay, 1968

The purpose of surprise is to strike at a time or place or in a manner for which the enemy is unprepared. Surprise can help the commander shift the balance of combat power and thus achieve success well out of proportion to the effort expended...³

Joint Publication 3.0 Doctrine for Joint Operations

We have the power to destroy his war making capacity. The only question is whether we have the will to use that power. What distinguishes me from [former President] Johnson is I have the will in spades.⁴

Richard Nixon to Henry Kissinger

¹ Luse Shackelford, and Ray, "Eleven Days in December: Linebacker II" (USAF Southeast Asia Monograph Series, Air University, 1977), V.

² Truong Nhu Tang, *A Viet Cong Memoir* (New York: Vintage Books, 1985), 168.

³ U.S. Joint Chiefs of Staff, *Doctrine for Joint Operations*, Joint Pub 3-0. (Washington: U.S. Joint Chiefs of Staff, 10 September 2001), A-2.

⁴ Henry A. Kissinger, *White House Years*, (Boston: Little, Brown and Company, 1979), 1199.

One more observation needs to be made, which goes to the very heart of the matter. Only the commander who imposes his will can take the enemy by surprise....⁵

Carl von Clausewitz

The first, the supreme, the most far-reaching act of judgment that the statesman and the commander have to make is [rightly to understand] the kind of war on which they are embarking, neither mistaking it for, nor trying to turn it into, something that its alien to its nature. This is the first of all strategic questions and the most comprehensive.⁶

Carl von Clausewitz

The bastards have never been bombed like they're going to be bombed this time.⁷

President Richard M. Nixon, May 1972

In any two-week period you mention.⁸

General Curtis LeMay, July 1986, when asked if the United State could have won in Vietnam.

I never said we should bomb them back to the Stone Age. I said we had the capability to do it.⁹

General Curtis LeMay

In war there is never any chance for a second mistake.

Lamachus, 465-414 B.C.E.

⁵ Carl von Clausewitz, *On War* ed. by Michael Howard, Peter Paret. (Princeton, NJ: Princeton University Press, 1984), 200.

⁶ Clausewitz, *On War*, 89.

⁷ Richard Nixon, statement to White House Chief of Staff H. R. Haldeman and Attorney General John Mitchell, April 4, 1972.

⁸ Interview of Curtis LeMay by Manny-Ann Bendel, *USA Today*, July 23, 1986, 9A.

⁹ Gen. Curtis Emerson LeMay, in *Washington Post* interview published October 4, 1968.

ABOUT THE AUTHORS

Gary D. Joiner, Ph.D.

Dr. Gary Joiner received a B.A. in history and geography and a M.A. in history from Louisiana Tech University and a Ph.D. in history from St. Martin's College, Lancaster University in the United Kingdom. He is a professor of History at Louisiana State University in Shreveport and serves as the Chair of the Department of History and Social Sciences, where he holds the Mary Anne and Leonard Selber Professorship in History. He is the director at the Strategy Alternatives Consortium (SAC) LSUS and the Red River Regional Studies Center.

Dr. Joiner is the principal author of prior SAC LSUS White Papers, including *OPERATION SENIOR SURPRISE: The Secret Squirrels and the opening of Operation DESERT STORM, 9/11: A Brief History and Case Study of America's Worst Terrorist Attack*, and *Deterrence: A Brief History and a Case Study in Cold War Practice, Part I: 1945-1953*. He is the author and editor of thirty-four books, including: *History Matters*, *Shiloh and the Western Campaign of 1862*, *One Damn Blunder from Beginning to End*, *Through the Howling Wilderness*, *The Red River Campaign: The Union's Last Attempt to Invade Texas*, *No Pardons to Ask or Apologies to Make*, *Little to Eat and Thin Mud to Drink*, *Mr. Lincoln's Brown Water Navy*, *The Battle of New Orleans: a Bicentennial Tribute*, *Red River Steamboats*, *Historic Shreveport-Bossier*, *Lost Shreveport: Vanishing Scenes from the Red River Valley*, *Historic Haunts of Shreveport*, *Historic Oakland Cemetery*, *Wicked Shreveport*, and *Legendary Locals of Shreveport*. Dr. Joiner is also the author of numerous articles and technical reports, and has served as a consultant for ABC, the Associated Press, A&E Network, C-SPAN, the Discovery Network, Fox News, HGTV, the History Channel, MSCBC, MTV, SyFy Channel, and Louisiana Public Broadcasting, among others.

Ashley E. Dean

Ashley Dean received her B.A. in history and M.A. in Liberal Arts from Louisiana State University in Shreveport. She was the graduate researcher for SAC LSUS and is now the full time Assistant Director for the Consortium. She has co-authored and edited prior SAC LSUS White Papers, including *OPERATION SENIOR SURPRISE: The Secret Squirrels and the opening of Operation DESERT STORM, 9/11: A Brief History and Case Study of America's Worst Terrorist Attack*, and *Deterrence: A Brief History and a Case Study in Cold War Practice, Part I: 1945-1953*. She recently published *Victorian to Victorious: Women in the American Civil War* in the 2016 edition of *Janus*, the journal of historical research published by the Department of History and Social Sciences at LSUS.

PREFACE

The Strategy Alternatives Consortium at Louisiana State University in Shreveport SAC LSUS) created a series of essays to commemorate the forty-fifth anniversary of the Operation LINEBACKER II, which, for America, all but ended the Vietnam War. These essays have been combined into a White Paper. All seven essays and the White Paper are available, free of charge, on the SAC LSUS website – www.lsus.edu/sac. The purpose is to assist professors, high school teachers, Air Force Association chapters, and ROTC units understand the campaign and put it in context of the time and the consequence it made in Air Force doctrine and subsequent political/military decisions.

Operation LINEBACKER II marked a seminal point in the Vietnam War. The campaign, sometimes referred to as “The Eleven-Day War,” brought the North Vietnamese, with sincerity, back to the peace talks in Paris and all but destroyed their ability to wage a defensive war against American Airpower. Most historians and strategists agree that LINEBACKER II was a tremendously successful endeavor. There are some dissenters, who point to a lack of significant targets.

This series of essays examines the literature, the role of participants, presidential administrations, and military commanders and planners to provide an overarching examination of LINEBACKER II. They also provide both orthodox and dissenting opinions so that the reader may make up his or her mind concerning the subject.

The chapters cover a brief examination of the campaign, a discussion of the political climate from the end of World War II to through the decisions to execute Operation LINEBACKER and LINEBACKER II, an examination of strategic bombardment theory from World War II to the early years of the Vietnam War, strategic assets and micromanagement of those assets between 1965 and 1972, Operation LINEBACKER I, Operation LINEBACKER II, and, finally, the consequences and change in strategic thought brought forward by the campaigns.

The authors, Gary D. Joiner, Ph.D. and Ashley E. Dean, wish to thank Lane Callaway, the Eighth Air Force Historian, the good folks who handle the Freedom of Information Act (FOIA) requests at Barksdale Air Force Base, Louisiana and Maxwell Air Force Base, Alabama, for their often as for requests, and Lieutenant General Robert Elder (USAF retired) for guidance in this project.

Gary D. Joiner
Director, SAC LSUS
Louisiana State University in Shreveport
November 5, 2017

ABBREVIATIONS USED IN THE LINEBACKER II SERIES

AAA- Anti-Aircraft Artillery	DIA- Defense Intelligence Agency
AAD- Anti-Aircraft Defenses	DMZ- demilitarized zone
AAF- Army Air Force (United States)	DOD- Department of Defense
AB- Air Base	DOE- Department of Energy
ABM- Anti-ballistic Missile	DRVN- Democratic Republic of Vietnam (North Vietnam)
ACC- Air Combat Command	ECM- electronic counter-warfare measures
ADC- Air Defense Command	ELINT- electronic intelligence
AEC- Atomic Energy Commission	EW- Electronic Warfare
AFA- Air Force Association	EWO- Electronic Warfare Officer
AFB- Air Force Base	FAS- Federation of American Scientists
AFGSC- Air Force Global Strike Command	HE- high explosive
AFM- Air Force Manual	ICBM- Intercontinental Ballistic Missile
ALCM- Air launched cruise missile	IP- Initial Point
ARVN- Army of the Republic of Vietnam (South Vietnamese national army)	IRBM- Intermediate Range Ballistic Missile
BARCAP- Barrier Combat Air Patrols	ISIS (IS, ISIS, ISIL, Daesh) - Islamic State of Iraq and Syria
BDA- Bomb Damage Assessment	JCS- Joint Chiefs of Staff
BW- Bomb Wing (USAF)	LGM- laser guided munitions
CALCM- Conventional air launched cruise missiles	MACV- Military Assistance Command, Vietnam
CENTCOM- Central Command (US)	MAD- Mutually Assured Destruction
CH- CORONA HARVEST	MAJCOM- Major Command
CIA- Central Intelligence Agency	MiG CAP- MiG Combat Air Patrol
CINCPAC- Commander US Military Assistance Command Pacific	MIRVs- multiple independently targeted vehicles
COMUSMACV- Commander US Military Assistance Command Vietnam	MIT- Massachusetts Institute of Technology
CONUS- Continental United States	NATO- North Atlantic Treaty Organization
DEW- Defense Early Warning (radar system)	NSC- National Security Council
	NSM- National Security Memorandum

NVA- North Vietnamese Army (North Vietnamese communist national army)

NVN- North Vietnam

PACAF- Pacific Air Forces

PAVN- People's Army of Vietnam (North Vietnamese communist national army)

PGM- Precision guided munitions

POL- Petroleum Oil and Lubricants

PRC- Peoples Republic of China

PTT- Post Target Turn

ROE- Rules of engagement

RP- Route Package

RT- Radar Troops

RTNAB- Royal Thai Naval / Air Base

SAC- Strategic Air Command

SAM- Surface to Air Missile

SAM-2- Surface to Air Missiles, model 2

SEA- Southeast Asia

SECAF- Secretary of the Air Force (U.S.)

SIOP- Single Integrated Operational Plan

SLBM- Submarine Launched Ballistic Missile

TAC- Tactical Air Command

TACAIR- Tactical Aircraft, Tactical Air, or Tactical Air Forces

TOT- Times on Target

UN- United Nations

UNSC- United Nations Security Council

USAAF- United States Army Air Force

USAF- United States Air Force

USS- United States Ship

USSBS- United States Strategic Bombing Survey

USSR- Union of Soviet Socialist Republics

VC- Viet Cong (guerilla communist force that cooperated with the PAVN/NVA)

WMD- Weapons of Mass Destruction

LIST OF FIGURES

Figure	Page
1. President Johnson and military advisers, White House, 1968	5
2. Loading munitions on a B-52D for ARC LIGHT sorties	7
3. ARC LIGHT Route Packages	9
4. Three-ship cell dropping bombs during ARC LIGHT	11
5. KC-135 refueling a B-52D during ARC LIGHT	12
6. ARC LIGHT sortie bomb detonations	13
7. ARC LIGHT munitions	14
8. B-52D ARC LIGHT sortie, 1965	15
9. Combat Skyspot installation at Da Lat, South Vietnam	16
10. Damage along the Ho Chi Minh Trail	17
11. Khe Sanh prior to siege	18
12. B-52 strike damage during siege of Khe Sanh	19
13. Craters from B-52 strikes near the Au Shau Valley	20
14. Trucks destroyed by USAF on Ho Chi Minh Trail	20
15. Operation ROLLING THUNDER theatre of operations	21
16. ARC LIGHT Target box	23
17. Sites bombed by USAF in Cambodia, 1965-1973	23

LIST OF TABLES

Table	
1. Joint Chiefs of Staff (original) 99-target list for North Vietnam	8
2. Joint Chiefs of Staff (revised) 94-target list for North Vietnam	25
3. Target complexes for ARC LIGHT	27

4.	ARC LIGHT B-52 Bases	2
----	----------------------------	---

PART 1

SERIES INTRODUCTION: OPERATION LINEBACKER II

In December 1972, in what was hoped to be the final weeks of the Vietnam War, President Richard M. Nixon ordered a massive bombing campaign against North Vietnam. The military campaign had strictly political origins. The Joint Chiefs of Staff (JCS) recommended in 1964 that North Vietnam be bombed and determined 94 targets that would wreck their ability to wage war.¹⁰ President Lyndon B. Johnson, Secretary of Defense, Robert S. McNamara, and Secretary of State Dean Rusk balked at the idea, fearing a Chinese invasion as in Korea.¹¹ This set the stage for civilian micromanagement of the military conduct of the war, troop strength, selection of targets, rules of engagement (ROE), and, to many commanders, observers and historians, the primary reason the war descended into the chaos that it became.¹² McNamara, in his position since 1961 and never popular with the military, became a pariah to the JCS and the commanders who followed his orders.¹³

North Vietnam invaded South Vietnam earlier that year using standard military tactics rather than guerrilla warfare. They hoped to take over the South Vietnamese government before U.S. forces, (deep into troop draw-downs) could hold them back. A series of long drawn out negotiations in Paris frustrated the Americans and the South Vietnamese. On December 13, North Vietnam suspended negotiations that attempted to establish a cease-fire agreement and return U.S. prisoners of war.¹⁴ At the same time, the U.S. Congress, tired of the political consequences of the war, determined to cut off funding for Southeast Asia military operations when members returned to Washington D.C. from their holiday recess in January 1973.¹⁵

¹⁰ Richard H. Kohn and Joseph P. Harahan editors, *Strategic Air Warfare: An Interview with Generals Curtis E. LeMay, Leon W. Johnson, David A. Burchinal, and Jack J. Catton* (Washington, 1988), 123; Robert F. Futrell, *The United States Air Force in Southeast Asia: The Advisory Years to 1965* (Washington, 1981), 253-256

¹¹ Futrell, *The United States Air Force in Southeast Asia*, 253-256; Alain C. Enthoven and K. Wayne Smith, *How Much Is Enough? Shaping the Defense Program 1961-1969* (New York, 1971); Charles J. Hitch, *Decision-making for Defense* (New York, 1965).

¹² Kohn and Harahan, *Strategic Air Warfare*, 121.

¹³ Ibid. 122; William W. Momyer, *Airpower in Three Wars* (Washington. 1978), 90-98; Carl Berger, ed., *United States Air Force in Southeast Asia, 1961-1973: An Illustrated Account* (Washington, 1977), 74-89; U.S. Grant Sharp, *Strategy For Defeat: Vietnam in Retrospect* (San Rafael, Calif., 1978), 94-104; James Clay Thompson, *Rolling Thunder, Understanding Policy and Program Failure* (Chapel Hill, 1980); John Morrocco, *Thunder From Above: Air War 1941-1968* (Boston, 1984), 50-71; U.S. Department of Defense, *The Pentagon Papers: The Senator Gravel Edition*, 4 vols., (Boston, 1972), III, 284-286, 321-324, 332-334, 339-340, IV, 55-56, 68-70, 109-110, 138, 421-422.

¹⁴ Henry Kissinger, *White House Years* (Boston, 1979), 717-744.

¹⁵ In November 1973, Congress enacted the War Powers Resolution, which limited the President's ability to send troops back into the theatre of operations to 90 days without receiving congressional approval. See Guenter Lewy, *America in Vietnam* (New York, 1978), 202-222; John H. Sullivan, *The War Powers Resolution* (Washington, 1982), 31-42, 103-166, 179, 183; W. Hays Park, "Linebacker and the Law of War," *Air University Review* 34 (Jan-Feb 1983): 2-30.

The bombing campaign, known as Operation LINEBACKER II, began on December 18 and lasted for 11 days. Air Force Strategic Air Command (SAC) B-52 bombers flew 729 sorties, and U.S. Navy and Air Force Tactical Air Command (TAC) fighter-bombers flew 1,000 sorties.¹⁶ The SAC bombers, naval fighter-bombers, and TAC aircraft dropped 20,370 tons of bombs on North Vietnam.¹⁷ They destroyed command and control structures, power generating plants, railroad marshalling yards and trackage, and destroyed military airfields, surface to air missile (SAM) assembly and storage facilities. At the end of the campaign, North Vietnam was largely in the dark, very low on ammunition, and had exhausted its supply of SAMs.¹⁸ Although additional missions were planned and preparations made, President Nixon halted the bombing on December 29.¹⁹ North Vietnam, without replenishment from China and the Soviet Union, agreed to return to negotiations in earnest. The results were merely a formality. The cease-fire agreement was signed on January 23, 1973 by Henry Kissinger for the United States and Le Due Tho for North Vietnam.²⁰

Operation LINEBACKER II's strategy and tactics remain the topic of discussion and planning today, forty-five years later. It proved that the Air Force commanders' concept of ending the war in 1965 would work militarily, but largely due to the threat of Chinese intervention, was nullified. Once the JCS and Air Force commanders could set targets themselves and not answer to the White House staff (within reason), destruction of the North Vietnamese will and capacity to wage became evident. The operation also led to unanticipated consequences. SAC lost much of its prestige due to its inflexibility. Beliefs in bomber stream formation from World War II and Korea for conventional bombing missions proved problematic for SAC crews who were trained to follow orders blindly in their nuclear combat roles. Iron bombs soon gave way to precision guided weapons. The vulnerability of the B-52s to SAMs quickly led to changes in tactics, mission concepts, and a reduction in the numbers of the heavy bombers. More senior commanders were chosen from the ranks of the fighter pilots.²¹

¹⁶ James R. McCarthy and George B. Allison, *Linebacker II: A View From the Rock* (Montgomery, Ala., 1979), 39-89.

¹⁷ *Ibid.*, 91-167.

¹⁸ *Ibid.*

¹⁹ Richard M. Nixon, *RN, The Memoirs of Richard Nixon* (New York, 1978), 717-744.

²⁰ Henry Kissinger, *White House Years* 740-744.

²¹ See Mike Worden, *Rise of the Fighter Generals: The Problem of Air Force Leadership 1945-1982* ((Montgomery, AL, 1988).

BIBLIOGRAPHY

- Berger, Carl, ed. *United States Air Force in Southeast Asia, 1961-1973: An Illustrated Account*. Washington: Office of Air Force History, 1977.
- Enthoven, Alain C., and K. Wayne Smith. *How Much Is Enough? Shaping the Defense Program 1961-1969*. New York: Harper and Row, 1971.
- Futrell, Robert F. *The United States Air Force in Southeast Asia: The Advisory Years to 1965*. Washington: Office of Air Force History, 1981.
- Hitch, Charles J. *Decisionmaking for Defense*. Berkeley: University of California Press, 1965.
- Kissinger, Henry. *White House Years*. Boston: Little, Brown and Company, 1979.
- Kohn, Richard H., and Joseph P. Harahan, eds. *Strategic Air Warfare: An Interview with Generals Curtis E. LeMay, Leon W. Johnson, David A. Burchinal, and Jack J. Catton*. Washington: Office of Air Force History, 1988.
- Lewy, Guenter. *America in Vietnam*. New York: Oxford University Press, 1978.
- McCarthy, James R., and George B. Allison. *Linebacker II: A View From the Rock*. Montgomery, AL: Air Power Institute, 1979.
- Momyer, William W. *Airpower in Three Wars (WWII Korea, Vietnam)*. Washington: Department of the Air Force, 1978.
- Morocco, John. *The Vietnam Experience: Thunder From Above, The Air War 1961-1968*. Boston: Boston Publishing Company, 1984.
- Nixon, Richard M. *RN, The Memoirs of Richard Nixon*. New York: Grosset and Dunlap, 1978.
- Park, W. Hays. "Linebacker and the Law of War." *Air University Review* 34 (Jan-Feb 1983): 2-30.
- Sharp, Ulysses S. Grant. *Strategy For Defeat, Vietnam in Retrospect*. San Rafael, CA: Presidio Press, 1978.
- Sullivan, John H. *The War Powers Resolution: a special study of the Committee on Foreign Affairs*. Washington, DC: Government Printing Office, 1982.
- Thompson, James C. *Rolling Thunder, Understanding Policy and Program Failure*. Chapel Hill, N.C.: University of North Carolina Press, 1980.
- United States Department of Defense. *The Pentagon Papers: The Senator Gravel Edition*, 4 vols. Boston: Beacon Press, 1971.
- Worden, Mike. *Rise of the Fighter Generals: The Problem of Air Force Leadership 1945-1982*. Montgomery, AL; Air University Press, 1998.

PART 4

Strategic Assets and Micromanagement -Vietnam 1965 – 1972

The Lyndon B. Johnson administration took over the John F. Kennedy administration's aims and goals following President Kennedy's assassination on November 22, 1963. The new president retained all the cabinet members and senior advisors from the previous administration. Among the most important of these were Dean Rusk as Secretary of State and Robert McNamara as Secretary of Defense. President Kennedy's agenda held two great tenants – first, keep America safe from a perceived monolithic communist plan to control the free world and, second, to spread civil rights to all disenfranchised races and ethnicities in the United States. The new president adopted both. President Johnson's first two years in office were consumed by challenges at home and abroad. His centerpiece legislation was the Civil Rights Act of 1964 followed by the Voting Rights Act of 1965. In foreign affairs, he was befuddled by an ever-increasing problem in Southeast Asia (SEA). Johnson inherited a rapidly deteriorating civil war in South Vietnam. American advisors, at the time of Kennedy's death, numbered less than 25,000 men. The corrupt president of South Vietnam, Ngo Dinh Diem, was assassinated two weeks prior to Kennedy's assassination.²² The succeeding eight administrations fell to coups. The United States guaranteed the existence of South Vietnam. In so doing, it failed to perceive that the struggle in Vietnam was essentially a war of unification that was backed by North Vietnam, China, and the Soviet Union, rather than a conquest that would trigger the Domino Theory. This Cold War theory, now discredited, held that a communist government in one nation would inevitably lead to communist takeovers in neighboring states, each falling like a row of dominos.

President Johnson's chief advisor for SEA was his Secretary of Defense, Robert S. McNamara. McNamara was brilliant but flawed. He believed that every conceivable problem could be reduced to reading statistical data. McNamara had misguided and mismanaged the SEA issue under President Kennedy and he geometrically complicated matters under President Johnson. Johnson was certainly anti-communist, but had a tremendous fear of Russian and/or Chinese intervention if the United States put its full effort in ending the war. It colored his actions during the next five years. McNamara later confessed that his actions, and those of Kennedy and Johnson were misguided.²³ President Johnson allowed McNamara to manage the defense budget, examine and reconstruct the nation's nuclear strategy, and do all of this while trimming to budget. The Secretary of Defense ignored the Pentagon and particularly the Air Force's requests. The Air Force saw reductions in bomber wing men and materiel in favor of vastly increasing cheaper ICBMs. McNamara could not see the consequences of his actions until several years later. The war escalated from a civil war in South Vietnam with North Vietnam aiding the Viet Cong and the United States aiding South Vietnam, to a direct confrontation between North Vietnam and the United States with the two original combatants playing secondary roles. Between 1964 and 1968 body counts became the primary factor in proving success.²⁴ McNamara, approved by the President, set the pattern. Johnson often bragged that "Those boys can't hit an outhouse without my permission."²⁵ Lyndon Johnson and Robert McNamara forced rules of engagement (ROE) that were at times almost impossible to follow. They created their own

²² Robert S. McNamara with Brian VanDeMark, *In Retrospect: The Tragedy and Lessons of Vietnam* (New York: Vintage Books, 1995), 81-87, 169-206.

²³ McNamara, "We Were Wrong, Terribly Wrong"; McNamara, *In Retrospect*, 172-73.

²⁴ McNamara, *In Retrospect*, 48; For a thorough analysis of the problems created by President Johnson, Robert McNamara, and their associates, see H. R. Mc McMaster, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, The Joint Chiefs of Staff, and the Lies That Led to Vietnam* (New York: HarperCollins, 1997).

²⁵ Joe Patrick, "Air Force Colonel Jacksel 'Jack' Broughton & Air Force General John D. 'Jack' Lavelle: Testing the Rules of Engagement During the Vietnam War," *Vietnam Magazine*, December 1997.

targeting lists that were seemingly incomprehensible. Johnson's main aim was to reduce the flow of supplies and men coming south along the jungle supply line called the Ho Chi Minh Trail. McNamara judged success only in one manner – did we kill more of their people than they killed of ours?



President Johnson and his military advisers in the White House early in 1968.

Figure 1. Image Source – Library of Congress, Secretary of Defense (right), President Lyndon Baines Johnson (right center) July 21, 1965, Leffler, Warren K. LC-U9-14298- 8A [P&P] | LC-DIG-ds-07431

The difference between strategic doctrine and tactical doctrine diverged during the early months of the Johnson Administration. Air campaign strategy quickly faced a divide with the president and his secretary of defense on one side and the Joint Chiefs of Staff (JCS) and the Strategic Air Command (SAC) on the other. The long-term consequences of this difference in views still reverberate today.

Air Force commanders did not want to see SAC committed to the war in Vietnam. SAC's mission was, and remained, to be the chief nuclear deterrent holding back the Soviets and the Chinese. General Carl A. Spaatz, the commanding general of the United States Army Air Force (USAAF), stated in 1946 that the Air Force's primary mission as the long-range striking power could destroy any enemy's industrial and war-making capacity anywhere on the globe.²⁶ Spaatz "gave first priority to 'the backbone of our Air Force – the long-range bomber groups and their protective long-range fighter groups organized in our Strategic Air Force.'"²⁷ This was to be accomplished by a force that decreased from 2.2 million people to 303,000 following the end of World War II.²⁸ SAC's doctrine followed this principle and, during the 1950s, consumed the lion's share of the defense budget. Tactical Air Command (TAC) received a miniscule share

²⁶ Earl H. Tilford, Jr. *SETUP: What the Air Force Did in Vietnam and Why* (Maxwell Air Force Base, Montgomery, AL: Air University Press, 1991), 8.

²⁷ Robert F. Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907-1964* (Maxwell Air Force Base, Montgomery AL: Air University Press, 1974), 9.

²⁸ Herbert Molloy Mason, Jr., *The United States Air Force: A Turbulent History* (New York: Mason/Charter, 1976), 216.

of the operations budget. Under General Curtis LeMay, SAC became the premier defender of the United States and the West.

In January 1964, Chairman of the Joints Chief of Staff Army General Maxwell D. Taylor told Robert McNamara that it was time for the United States to take “bolder actions” in Vietnam and that the Air Force and Navy should bomb North Vietnam.²⁹ Johnson did nothing until North Vietnamese patrol boats attacked the destroyer USS *Maddox* in August 1964 in the Gulf of Tonkin, which allowed Congress to pass the Tonkin Gulf Resolution.³⁰ Viet Cong units attacked U.S. military forces bases and facilities in South Vietnam almost immediately. The president refused all requests to bomb North Vietnam until February 24, 1965. On that day Operation ROLLING THUNDER commenced. This major aerial interdiction campaign gradually increased pressure against North Vietnam. It continued nearly four years.³¹

Army General William C. Westmoreland, the theatre commander, Military Assistance Command, Vietnam (MACV), asked that his ground force contingent be tripled to halt the gains of the Viet Cong. The United States had to decide whether to withdraw and simply support the South or put boots on the ground in major concentrations. Robert McNamara drafted a memorandum to President Johnson which gave General Westmoreland all his demands. Additionally, it ordered the Navy to mine Haiphong harbor and smaller ports, and for the Air Force to destroy the railyards and trackage between Hanoi, Haiphong and China and to bomb MiG air bases and SAM sites.³² After spending a week in South Vietnam in August, McNamara rescinded the order to bomb the harbors and placed heavy restrictions on ROLLING THUNDER to prevent the Chinese from having an excuse to intervene.³³

Air Force leaders, particularly General Curtis LeMay, did not believe that the war in Vietnam would remain limited. In January 1965, the JCS authorized Boeing to reconfigure the bomb bays of B-52 D and F models into so-called “Big Bellies.” This changed the capability of the B-52s to only carry nuclear weapons, but to carry approximately 70,000 pounds of 500- and 750-lb bombs. The following month, the JCS order SAC to dispatch thirty B-52s to the Eighth Air Force at Andersen AFB, Guam.³⁴ The SAC commander, General Thomas S. Power opposed any modifications to the B-52s, citing the SIOP requirements. He was overruled.³⁵ B-52s began running bombing operations from Andersen Air Force Base in June 1965. An angry General LeMay wrote the next month, “The military task confronting us is to make it so expensive for the North Vietnamese that they will stop their aggression against South Viet Nam and Laos. If we make it too expensive for them, they will stop. They don’t want to lose everything they have.”³⁶ General Power

²⁹ Neil Sheehan *et al.*, *The Pentagon Papers as Published by The New York Times* (New York: The New York Times & Bantam Books, 1971), 277; R. Cargill Hall, editor, *Case Studies in Strategic Bombardment* (Washington: Air Force History and Museums Program, 1998), 493.

³⁰ The Gulf of Tonkin Resolution or the Southeast Asia Resolution, Pub. L. 88-408, 78 Stat. 384, enacted August 10, 1964, was a joint resolution that the United States Congress passed on August 7, 1964, in response to the Gulf of Tonkin incident.

³¹ Operation ROLLING THUNDER was aerial bombing operation that ran from February 24, 1965 to the end of October 1968. It was the longest aerial bombing campaign in history, although it was not continuous, with frequent halts imposed by President Johnson. It was conducted by the U.S. 2nd Air division, the U.S. Navy and the Republic of Vietnam Air Force. The primary targets of the campaign were sites along the triple canopy jungle that hid much of the Ho Chi Minh Trail. For a detailed analysis of ROLLING THUNDER, see Col. Dennis M. Drew, “Rolling Thunder 1965: Anatomy of a Failure” (Montgomery AL: Maxwell Air Force Base, Air and Command Staff College, Air University, 1986).

³² Col Dennis M. Drew, “Vietnam, ‘Wars of the Third Kind’ and Air Force Doctrine,” paper presented at Texas Tech University Center for the Study of the Vietnam Conflict, seminar on the Vietnam War, 18–21 April 1996, 22.

³³ Hall, *Case Studies*, 496.

³⁴ Drew, “Vietnam: Wars of the Third Kind,” 22-23.

³⁵ Futrell, 2:257–58.

³⁶ Curtis E. LeMay with MacKinlay Kantor, *Mission With LeMay* (Garden City, NY: Doubleday 1965), 564.



Figure 2. Loading munitions on a B-52D “Big Belly” prior to an ARC LIGHT sorties. Image Source: United States Air Force.

continued his comments internally. Power told the Air Staff not to “talk to me about that; that’s not our life. That’s not our business. We don’t want to get in the business of dropping any conventional bombs. We are in the nuclear business, and we want to stay there.”³⁷ Air Force Major General Howard Davis remarked just after deploying B-52s to Guam in 1965 that, “he would have put anyone in a strait jacket who told him a few weeks before that he would be using B- 52s to drop iron bombs on guerrillas in Vietnam.”³⁸ SAC, as an organization, did not want to risk its primary nuclear mission and its valuable bombers “in what was essentially a civil war halfway around the world.”³⁹ “Conventional ‘little wars’ were unimportant compared with keeping SAC strong.”⁴⁰ SAC brought forth three major objections about sending B-52s to Guam to be used in a counterinsurgency war: “First, it would detract from its SIOP and alert commitment; second, it would take too much time to reconfigure the aircraft and resume control for strategic operations, if needed; and third, the B-52’s systems could be compromised in Southeast Asia, which would reduce its deterrent credibility in general war.”⁴¹ A fourth reason, which SAC would not admit to was that its aircrews were not

³⁷ Worden, *Rise of the Fighter Generals*, 173.

³⁸ *Ibid.*, 174.

³⁹ Christopher M. Wilcox, “Lessons from Vietnam: Should B-52 Squadrons Perform Both Nuclear and Conventional Mission?” Research Report, (Montgomery AL: Maxwell Air Force Base, Air and Command Staff College, Air University, 2009), 5-6.

⁴⁰ Marshall L. Michel III, *The 11 Days of Christmas” America’s Last Vietnam Battle* (New York: Encounter Books, 2001), 166.

⁴¹ Worden, *Rise of the Fighter Generals*, 174

“fully prepared to employ conventionally given the inflexibility of the missions they practiced.”⁴² “B-52 crews had a two-week course on conventional operations, then they went on a six-month rotation to Guam. They went ‘with only the barest introduction to conventional tactics’ and used modified nuclear bombing procedures. They lacked institutional innovation.”⁴³

President Johnson refused to listen. He also refused to allow the B-52s to go after a list of 99 targets identified by the JCS within the industrial and military centers in North Vietnam. This list reduced to 94 targets within one year. Instead he found himself involved in “a piddling pissant little country”⁴⁴ with the

Table 1. The original 99 target menu created by the Joint Chiefs of Staff.

**JCS Working Group 99-Target List for North Vietnam,
22 May 1964**

Target Sets	Category A	Category B	Category C	Total
Airfields	5	3	-	8
Road Line of Communications	4	1	-	5
Military Barracks	6	9	-	15
Ammunition Dumps	2	7	-	9
Military Headquarters	8	3	-	11
Supply Dumps	5	14	-	19
Military Training Center	-	1	-	1
Storage Areas	-	4	-	4
Ports	-	7	-	7
Storage Depot	-	1	-	1
Railroad/Highway Bridges	-	9	-	9
Railroad Yard/Shop Complexes	-	2	-	2
Chemical Plant	-	-	1	1
Iron/Steel Plant	-	-	1	1
Radio Broadcast Facilities	-	-	2	2
Thermal Power Plant	-	-	1	1
Machine Tool Factory	-	-	1	1
Industrial Plant (other)	-	-	2	2
TOTAL	30	61	8	99

Source: Lt Col William E. Long, *Target Selection Process: Categories and Decision Levels*, Air War College Research Report 3634 (Maxwell AFB, Ala.: Air University, April 1968), in the Air Force Historical Research Agency (AFHRA), file K239.042-3634, 14. Document is now declassified.

The above table outlines the targets selected by the JCS joint working group tasked to develop target options for execution against North Vietnam. It was presented to CINCPAC for comment and further development on 22 May 1964. Targets were grouped into three categories:

Category A – “included those targets the destruction of which was expected to bring an immediate reduction of DRV support to PL [Pathet Lao] and VC forces. These targets were near the national boundary (NVN/SVN and Laos/NVN), or on a key logistical route.”

Category B – “included targets the destruction of which would reduce the DRV military capability to take action against Laos and SVN. These targets were somewhat more remote from the national boundaries, and key logistical routes.”

Category C – “included selected industrial targets. Eight specific targets were listed.”

Source: Charles Tustin Kamps, “*The JCS Target List: A Vietnam Myth That Distorts Military Thought*,” *Air and Space Power Journal*, (Montgomery, AL: Maxwell Air Force Base, 2001), 71.

⁴² Wilcox, “Lessons from Vietnam,” 6.

⁴³ Worden, *Rise of the Fighter Generals*, 174.

⁴⁴ Jeffrey Record, *The Wrong War: Why We Lost in Vietnam* (Annapolis, MD: Naval Institute Press), 436.

President and his Secretary of Defense falling into a vicious cycle of gradual force buildup and limited use of strategic and tactical air power. Airpower was used as a cheap alternative to deploying massive numbers of ground troops. President Johnson's plan ignored the need to stabilize South Vietnam socially, politically, and economically. It was apolicy, coupled with the resilience of the enemy that—in retrospect— could not secure South Vietnam or defeat the VC Southern Communist guerrillas or the People's Army of Vietnam (PAVN). US airpower became a compromise weapon for Johnson. It limited the commitment of ground forces, especially reserves, and caused spectacular numbers and pictures of destruction.⁴⁵

General John D. Ryan ascended to SAC command in December 1964. He was less concerned about using SAC B-52s in SEA as long as they were under SAC's control. The first 30 B-52Fs deployed to Andersen Air Force Base on Guam in February 1965.⁴⁶

ARC LIGHT – B-52 Raids, 1965 – 1968

ARC LIGHT was the first concerted effort to use B-52s in ground support missions from high altitude over South Vietnam, Cambodia, and Laos. Like ROLLING THUNDER missions, some of which used B-52s, the primary target was the Ho Chi Minh Trail. They attempted to interdict North Vietnamese

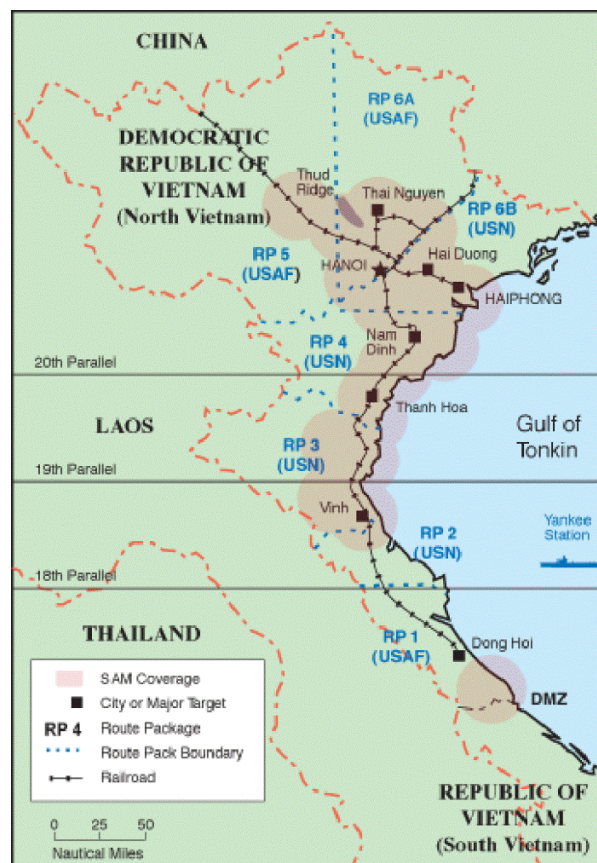


Figure 3. ARC LIGHT Route Packages. Source: Lee Brimmicombe-Wood, airbattle.co.uk.

⁴⁵ William P. Head, *War From Above the Clouds: B-52 Operations during the Second Indochina War and the Effects of the Air War on Theory and Practice*, Fairchild Paper, (Montgomery, AL: Air University Press, 2002), 12.

⁴⁶ *Ibid.*, 18.

and Viet Cong from bringing troops and supplies from the north and support ground troops. The B-52s in the first three years of ARC LIGHT were based at Andersen Air Force Base on Guam, Kadena Air Force Base on Okinawa and from U-Tapao Royal Navy/ Air Force Base Thailand.⁴⁷ During the period through 1968, most ARC LIGHT sorties flew below the demilitarized zone (DMZ) on either side of the international boundary. Only 141 sorties flew between the DMZ at the 17th parallel and the 20th parallel.⁴⁸

Air Force planners realized from the beginning that using BUFFs⁴⁹ as high-altitude artillery in SEA contained many heretofore unseen problems. The most important was the fact that the dense triple canopy jungle offered few, if any offset aiming points or specific ground references to bombing accuracy. All prior missions for the BUFF's were for industrial or major urban areas.⁵⁰ Secondly, any B-52s used in counterinsurgency sorties would remove them from their primary task of being part of the nuclear umbrella of the SIOP.⁵¹ General Westmoreland, commanding MACV, made his case before the JCS that B-52s were more ideally suited for the job of carpet bombing jungles than fighters and fighter-bombers, because they could efficiently deliver a wide, even pattern over a large area [bombing target boxes].⁵² The Air Force planners countered that:

the concept of operational bombing procedures for large scale non-nuclear strikes was inconsistent with existing SAC materiel concepts, since B-52 crew training and doctrine were designed for strategic nuclear conflict. The basic Arc Light task of area bombing . . . required only a narrow spectrum of the available conventional weapons inventory,' which included M-117 750 lb. bombs, MK-82 500 lb., BLU-3B and BLU-26B antipersonnel bomblets, and AN-M65A1 general purpose and AN-M59A1 semiarmor-piercing 1,000 lb. bombs.⁵³

From 1965 through 1968, ARC LIGHT assigned B-52s dropped high explosive (HE) bombs, which accounted for 97.2 percent of the total bomb loads.⁵⁴ General Westmoreland got his wish and SAC pilots

⁴⁷ John T. Correll, "Arc Light: The B-52s fought their war in Vietnam without ever leaving SAC" Air Force Magazine: January 2009, 58-62.

⁴⁸ John F. Guilmartin, Jr., "Arc Light," in *Encyclopedia of the Vietnam War*, ed. Stanley I. Kutler (New York: Charles Scribner's Sons, 1996), 48; Headquarters SAC, "Activity Input to Project Corona Harvest-Arc Light Operations, 1 Jan 65-31 Mar 68," USAF special study, 3 vols.; Carl Berger, ed., *The United States Air Force in Southeast Asia, 1961-1973: An Illustrated Account* (Washington, D.C.: AFHO, 1984); and John Schlight, *The Air War in South Vietnam: The Years of the Offensive, 1965-1968* (Washington, D.C.: AFHO, 1988).

⁴⁹ BUFF is the most common affection nickname for the B-52. Depending upon how politically correct the speaker or writer is, the anacronym stands for "Big Ugly Fat Fucker" (or Fellow).

⁵⁰ *The Joint Chiefs of Staff and the War in Vietnam, 1960-1968*, pt. 2, 24-1, 2; History, SAC, January-June, 1965, 198; and Schlight, 49.

⁵¹ *The Joint Chiefs of Staff and the War in Vietnam, 1960-1968*, pt. 2, 24-1, 2; History, SAC, January-June, 1965, 198.

⁵² SAC, "Activity Input to Project Corona Harvest, Arc Light" (Offutt AFB, NB.: SAC/History Office, 1970), 2:2; History, SAC, January-June, 1964; Message, 140805Z MAY 65, Commander, US Military Assistance Command, Vietnam (COMUSMACV) to Commander in Chief Pacific Command (CINCPAC), May 14, 1965; Schlight, 50; Larry Cable, *Unholy Grail: The U.S. and the Wars in Vietnam, 1965-1968* (London: Routledge, 1991), 98-100, 109.

⁵³ Head, *War From Above the Clouds*, 18-19.

⁵⁴ SAC, "Activity Input to Project Corona Harvest, Arc Light," 2:2-3, 5-9, 12-13 (quote page 5); History, 3d Air Division, January-June 1967, 134; History, CINCPAC, 1967, 2:711; Corona Harvest (CH), *A Chronology of Important Airpower Events in Southeast Asia, 1950-1968* (Maxwell AFB, AL.: Aerospace Studies Institute, Air University, May 1, 1969), 222; Director of Operations, DCS, Plans and Operations, Headquarters USAF, study,

dutifully obeyed. The bomber pilots immediately realized that the SAC objections were correct. From high altitude, the jungle looked green and flat. There were few, if any landmarks, initial points, or visible targets along the Ho Chi Minh Trail.⁵⁵ For many of the crews, the daily routine became one of “bombing monkeys.”⁵⁶ The B-52s that bore the brunt of the heavy bombing missions were, in all cases, strategic weapons taken out of their primary mission and converted to air support for ground troops. This was a hard lesson for SAC and its aircrews to learn.

The first bombing mission for the B-52s was conducted on June 18, 1965. The JCS demanded that no civilians in the target area, ten miles north of Saigon, be harmed.⁵⁷ This would be a difficult test of coordination of the air crews, a switchover from the nuclear mission protocols, and pinpoint bombing with multiple cells of three aircraft each saturating a defined small target. The target box was a one- by two-mile



Figure 4. A typical B-52 three ship cell drooping bombs during an ARC LIGHT sortie. Image Source: United States Air Force.

“Analysis of B-52 Conventional Operations in SEA,” October 29, 1965; and Head, *War From Above the Clouds*, fn 44.

⁵⁵ Schlight, 50; and History, SAC, July–December 1965, 2:267.

⁵⁶ Conversation with Philip Blaufuss, B-52 radar navigator, who participated in both Fail Sate and Vietnam missions including Linebacker II. Interviewed by Gary D. Joiner, Ph.D. and Ashley Dean on September 12, 2017.

⁵⁷ Schlight, 51–52; History, SAC, July–December 1965, 2:267.

rectangle.⁵⁸ The mission planning was logistically complex. The mission plan called for 30 B-52F models flying in ten three-ship cells flying from Andersen Air Force Base. Ordinance was mixed, with twenty-four BUFF's carrying fifty-one 750 lb. bombs and six carrying 1,000 lb. armor-piercing bombs.⁵⁹ The planes were scheduled to launch from Guam at 0100 hours (1 a.m. local time), meet KC-135 tankers over the island of Luzon in the Philippines, and then join up over the target.⁶⁰ Then, the complexity of the mission plans came into sharp focus:

Things began as planned, but tailwinds from a typhoon in the eastern Pacific pushed the bombers ahead of schedule. When the first cell banked 360 degrees to slow for the arrival of the refuellers, they ran into the path of the second cell in the dark skies over the South China Sea. Two planes collided and crashed into the sea. Eight crew members perished, while the four survivors and one body were recovered. Only 27 of the bombers refueled. The 28th bomber, with a broken hydraulic pump and radar, landed in Okinawa. The remaining bombers crossed the Vietnamese coast at 0630 hours and dropped their first bombs 15 minutes later from about 20,000 feet. Guiding off a beacon placed in the area the night before, they bombed a one-by-two-mile target box with 1,300 bombs. Half the bombs hit inside the box. They then flew south to avoid the Cambodian border, and near Saigon they turned east toward Guam. One bomber was forced to land at Clark AB (formerly AFB), Philippines, because of electrical problems. The last bomber landed exactly 13 hours after the first one had departed.⁶¹



Figure 5. KC-135 refueling a B-52D during early an early ARC LIGHT mission. Note that the B-52 does not yet have SEA camouflage. Photo was taken c. 1965. Image Source: United States Air Force.

⁵⁸ Schligh, 51–52

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Head, *War From Above the Clouds*, 19-20.

Post bombing ground survey discovered no Viet Cong dead and very little damage to their camp. The enemy was tipped off from a traitor in an Army of Vietnam (ARVN) unit.⁶² The mission made worldwide news. The coverage was uncharacteristically negative. Most of the stories denounced the B-52 mission as “using a sledgehammer to kill gnats” or “using a sledgehammer to kill fleas.”⁶³ The Air Staff understood that B-52 operations against the Viet Cong must be reconsidered to type and place. Flying BUFFs from Guam or Thailand left little in the formula for quick response.⁶⁴ As a result, more ARC LIGHT raids were conducted in the following months using fewer aircraft flying more missions. Missions were allowed to be staged with constant approval from senior leadership at MACV or the JCS for relatively short timed needs.⁶⁵ MACV and SAC created five “bomb free zones” for this (semi) rapid response. Each of the zones had pre-planned target folders. All were considered to be Viet Cong infested areas with limited chance of destroying “friendlies.” Two zones were close to and north of Saigon. Two were in the Mekong Delta, near the southern tip of South Vietnam. The fifth, southeast and near Da Nang.⁶⁶ The JCS controlled final target approval and MACV was brought in when U.S. ground forces were in or near the target area.⁶⁷



Figure 6. ARC LIGHT sortie bomb detonations. Image Source: United States Air Force.

⁶² Ibid., 20.

⁶³ Hopkins and Goldberg, 131 (quote p. 131); Corona Harvest (CH), *A Chronology of Important Airpower Events in Southeast Asia, 1950–1968* (Montgomery, AL, Maxwell Air Force Base.: Aerospace Studies Institute, Air University, May 1, 1969), 103.

⁶⁴ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 104.

⁶⁵ Ibid., 114; History, SAC, July–December 1965, 2:270–71.

⁶⁶ Ibid.

⁶⁷ Ibid.

The first B-52 mission to directly support U.S. troops took place on November 14, 1965 and continued through the remainder of that month. U.S. 1st Cavalry Division troops routed a Viet Cong and North Vietnamese attack after an attack on a Special Forces (Green Beret) camp at Plei Me in the Central Highlands. The 1st Cav chased the enemy near Pleiku and found two North Vietnamese regiments in the Ia Drang Valley adjacent to the border with Cambodia. Fighting was fierce and the enemy forces came close to destroying the American units. The Cavalry officers called in for air strikes to allow them to slip out of the valley. Two days after the initial engagement, eighteen B-52s dropped 344 tons of bombs on the North Vietnamese troop concentrations. During the two weeks that followed, the SAC bombers flew ninety-six sorties and dropped 1,795 tons of bombs.⁶⁸

B-52s ran most of the ARC LIGHT missions because TAC aircraft were tied up in ROLLING THUNDER missions. TAC was tasked to specifically “work in coordination with the Army Developments Command to develop mutually agreeable joint doctrinal manuals for submission to the Joint Chiefs of Staff.”⁶⁹ This created friction among the Air Staff, MACV, the Navy Carrier Task Force 77, and the air crews. Fighters were in short supply since Air Force budgets were constantly tilted toward nuclear missions, aircraft and crews. The result was a confusing reassignment of tasks and missions by SAC and TAC. Robert Futrell wrote: “It was tragic irony that the air war in SEA would necessitate an agonizing relearning process and a hurried adaptation of weapon systems back into an arena thought to have been eliminated [conventional tactical fighter operations].”⁷⁰

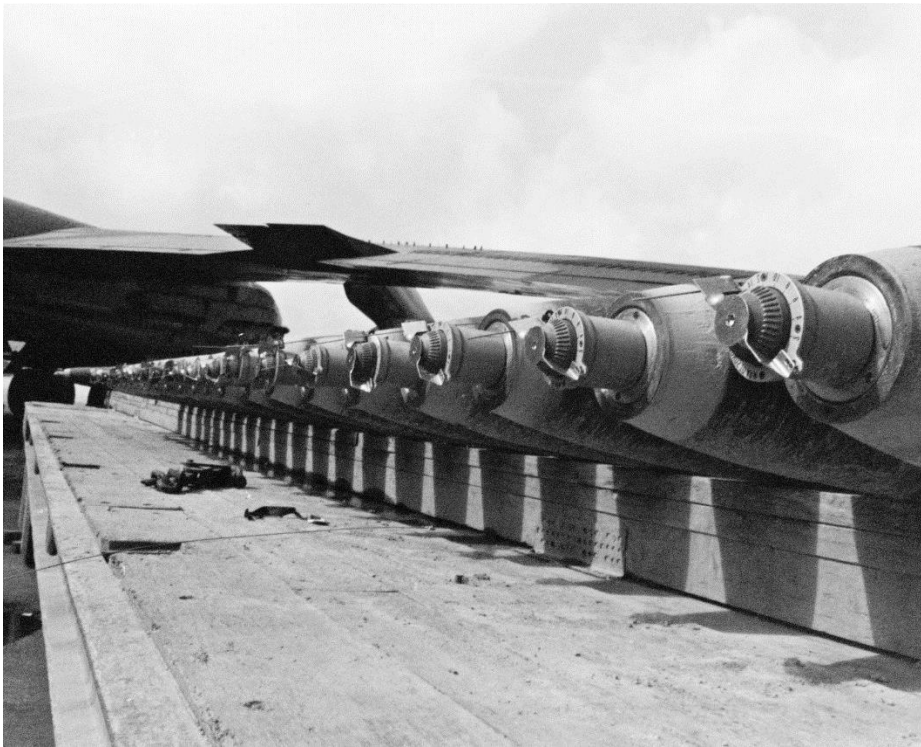


Figure 7. Munitions prepared for loading on a B-52D “Big Belly” prior to an ARC LIGHT sorties. Image Source: United States Air Force.

⁶⁸ William W. Momyer, *Air Power in Three Wars* (Washington, D.C.: GPO, 1978), 283–88; Pacific Air Forces (PACAF), CH, *Command and Control*, bk. 2, pt. 2, 4–20; PACAF, CH, *Out-Country Report*, bk. 1, 31, 83 and bk. 2, 60; Berger, *United States Air Force in Southeast Asia*, 150; History, SAC, July–December 1965, 279–86.

⁶⁹ Futrell, 2:191. Original quote in Air Force Regulation 1-1, *Aerospace Doctrine: Responsibilities for Doctrine Development*, March 20, 1963.

⁷⁰ Futrell, 2:288.

The Air Force found that to carry out the missions in Indochina it must increase the bomb capacity in some of its B-52s. It chose to keep, if it could, G and H models for use in “more significant SIOP role.”⁷¹ The older D models were chosen for reconfiguration and fitted for all-weather operations. This need was recognized in a RAND Corporation report in 1966: “The Air Force has no (conventional weapon) capability for all-weather bombing in SEA.”⁷² All 155 D model BUFFs were reconfigured to carry eighty-four rather than twenty-seven 500 lb. bombs or forty-two instead of twenty-seven 750 lb. bombs internally. Including bombs fixed to the wing pylons of the bombers, the maximum bomb load increased from 38,000 to 60,000 lbs.⁷³ These became the “Big Bellies.” In 1967, the B-52Ds began operating out of U-Tapao RTNAB in Thailand.⁷⁴ Of the 155 converted B-52Ds, twenty-two were lost in the Vietnam War.⁷⁵ The numbers of sorties increased with the capabilities of the B-52s. This led to bomb shortages, particularly in MK-82 bombs. This in turn caused shortages in ROLLING THUNDER missions.⁷⁶



Figure 8. B-52 D dropping bombs during an early ARC LIGHT sortie in 1965. Image Source: United States Air Force.

In the words of Major General Theodore R. Milton, “the Army became over-dependent on air support, and air support of a kind highly vulnerable against a modern force.”⁷⁷ The B-52 became the ultimate

⁷¹ SAC, “Activity Input to Project Corona Harvest, Arc Light,” 2:16–18.

⁷² RAND Corporation, “Air Interdiction in Southeast Asia, 1966,” iii.

⁷³ SAC, “Activity Input to Project Corona Harvest, Arc Light,” 2:16–18.

⁷⁴ Ibid., 2:10–11.

⁷⁵ Ibid.

⁷⁶ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 167; SAC, “Activity Input to Project Corona Harvest, Arc Light,” 2:16–17.

⁷⁷ Bruce Palmer, ed., *Grand Strategy for the 1980s* (Washington, D.C.: American Enterprises Institute for Public Policy Research, 1978), 67.

weapon of last resort during ARC LIGHT.⁷⁸ As interdiction sorties became the norm along the Ho Chi Minh Trail, it became obvious that the North Vietnamese Army (NVA) and the Viet Cong feared what the big bombers could do.⁷⁹ The Ho Chi Minh Trail became the scene of one of the first interdiction sorties in April 1966. The Mu Gia Pass was a portion of the trail between North Vietnam and Laos that supported truck convoys. It contained road repair compounds and had its own anti-aircraft batteries. The BUFFs plastered the sites from April 12 through 26, 1966.⁸⁰ Immediately after the bombing, North Vietnamese work crews repaired the damage and the flow of supplies continued.⁸¹ Air Force and SAC commanders grew concerned when the NVA placed Russian Surface to Air Missiles, model 2 (SAM-2) along the Ho Chi Minh Trail.⁸²

Reaction time decreased for some missions beginning in July 1966 with the implantation of the Combat Skyspot rapid-response alert system. Six B-52s from Guam and six KC-135s from Kadena Air Base on Okinawa used a modified alert system, which reduced their response time to nine hours.⁸³ Most of the D models were based in U-Tapao. This brought several advantages. Because air crews could fly missions in two to five hours they did not need refueling. BUFFs flying from Guam required twelve to fifteen-hour missions and at least one refueling, usually at night over the Pacific Ocean.⁸⁴ The last of the Big Belly D's arrived on Guam in September 1967. By the end of the year, the amount of ARC LIGHT bomb tonnage doubled.⁸⁵ Operation JUNCTION CITY was executed between February to May 1967. B-52s flew 126 sorties and dropped 4,723 tons of bombs.⁸⁶ Seventy-five percent of the NVA and Viet Cong casualties were credited to B-52s.⁸⁷



Combat Skyspot installation at Da Lat, South Vietnam.

Figure 9. Image Source, Bernard C. Nalty, *Air War over South Vietnam 1968-1975* (Washington: Air Force History and Museums Program, 2009), 131.

⁷⁸ Head, *War From Above the Clouds*, 26.

⁷⁹ History, SAC, January–June 1966, 138; Schlight, 152–53; and CH, *A Chronology of Important Airpower Events in Southeast Asia*, 177–82, 186.

⁸⁰ Schlight, 152–53.

⁸¹ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 185–86.

⁸² Head, *War From Above the Clouds*, 28.

⁸³ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 197–99.

⁸⁴ *Ibid.*, 221.

⁸⁵ *Ibid.*, 227, 231; History, SAC, January–June 1966, 145; History, SAC, January–June 1967, 131.

⁸⁶ Berger, 151–56; Schlight, 250–58.

⁸⁷ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 235, 238.

ARC LIGHT missions contributed greatly to the fighting during the latter months of 1967. B-52s flew 228 sorties against thirty-two targets during battles between the US 4th Infantry Division and the NVA 1st Division near the Special Forces camp at Dak To.⁸⁸ They flew thirty-six more sorties in late November in support of US and ARVN forces fighting VC main force units near Loc Ninh.⁸⁹ They attacked storage areas and truck traffic 102 miles northwest of Con Thien.⁹⁰ Despite this, the Secretary of Defense convened what he called the “Jason Division” of Institute for Defense Analyses, which consisted of eighty-seven hand-picked scholars and scientists that would agree with him. They based their reports Central Intelligence Agency data. Their report stated: “the Jasons categorically reject bombing as an effective tool.”⁹¹ Rather than having been degraded, they determined that enemy transportation “actually had been improved because of added redundancy. Where one road had existed previously, several had been built.”⁹² Citing this evidence, they judged, “we are unable to devise a bombing campaign in the North to reduce the flow of infiltrating personnel into [South Vietnam] SVN.”⁹³

The JCS countered this report by making ten recommendations to remove all restrictions from potential targets, to mine all North Vietnamese ports, and to increase the number of B-52s in theater.⁹⁴ President Johnson feared that war would spill over into China and that Russians might intervene. He wanted the JCS to bring him a conventional strategy that would work to thwart North Vietnamese intentions. The JCS responded with even more requests. Johnson wrote that their next request would be to “bomb targets in China.”⁹⁵ He all but screamed to several senior officers at this time, “bomb, bomb, bomb, that’s all you know.”⁹⁶

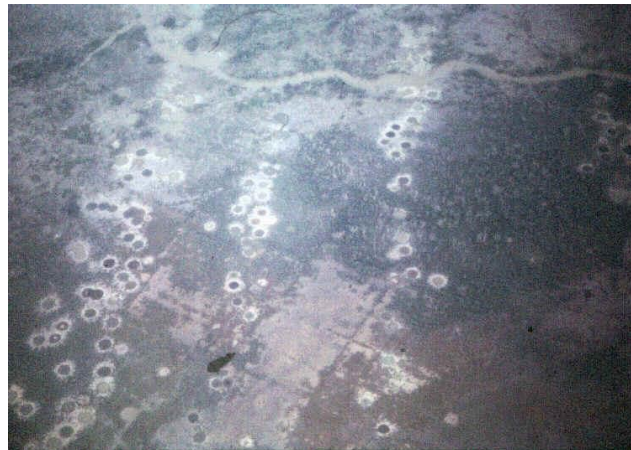


Figure 10. Damage from a three-ship cell of B-52s along the Ho Chi Minh Trail. Image Source: United States Air Force.

⁸⁸ Berger, 156; CH, *A Chronology of Important Airpower Events in South-east Asia*, 252, 254; History, SAC, July–December 1967, 18; and History, Seventh Air Force, 1 July–31 December 1967, 21.

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ “Jason Report,” *Pentagon Papers*, 4:227, 275; Tilford, 88, 96, 97; Head, *War From Above the Clouds*, 30.

⁹² “Jason Report,” *Pentagon Papers*, 275.

⁹³ Ibid.

⁹⁴ Tilford, 96–97; and Lawrence J. Korb, *The Joint Chiefs of Staff: The First Twenty-Five Years* (Bloomington, Ind.: University of Indiana Press, 1976), 181; Col Herbert Y. Schandler, “The President, the Secretary of Defense, and the Joint Chiefs of Staff: The Political Direction of the War,” paper presented to the 1996 Vietnam Symposium, Texas Tech University, April 18, 1996.

⁹⁵ Korb, *The Joint Chiefs of Staff*, 176.

⁹⁶ Tilford, 96–97.

The siege of the Marine Base at Khe Sanh, from January 14 to March 31, 1968 illustrated how using strategic bombers for interdiction missions should work. The Marines were encircled on a hilltop surrounded by valleys, draws, and an outer ring of higher elevations. The situation could have easily become a repeat of the French defeat of Dien Bien Phu in 1954. Khe Sanh was supplied by aircraft using its airstrip



Figure 11. The U.S. Marine camp at Khe Sanh prior to the siege. Image Source: United States Department of Defense.

until it became untenable. The North Vietnamese had large amounts of both infantry, artillery, and anti-aircraft artillery. TAC airstrikes kept the base from being overrun, but weather, available munitions, and command and control issues hampered their assistance. B-52s became the go-to response. During the siege, the BUFFs flew 2,707 sorties and dropped 75,631 tons of bombs.⁹⁷ Ground controllers and their radars used a technique known as “Bugle Note,” to keep a constant stream of three to six B-52s near Khe Sanh, rotating in and out every three hours.⁹⁸ The three aircraft cells hit enemy positions every three hours.⁹⁹ The B-52s navigated to predetermined points where they picked up by the Skyspot ground radar which guided them to a specific set of targets. Rather than five to nine- hour planning and flight schedule, targets could be changed as needed within two hours.¹⁰⁰ By increasing the frequency of inbound and outbound flights, the B-52s could, and sometimes did, pound the NVA without interlude.¹⁰¹ Initially, the BUFFs bombed rear staging areas, supply dumps and artillery positions at least 3,300 yards outside the Marines’ outer perimeter.¹⁰² Reconnaissance units discovered the NVA had constructed underground bunkers within the

⁹⁷ History, SAC, July–December 1967, 152–53.

⁹⁸ CH, *Command and Control*, bk. 1, pt. 2, 25.

⁹⁹ Ibid.

¹⁰⁰ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 261–63, 268; Berger, 156–57.

¹⁰¹ History, SAC, July–December 1967, 152–53.

¹⁰² CH, *A Chronology of Important Airpower Events in Southeast Asia*, 273–74.

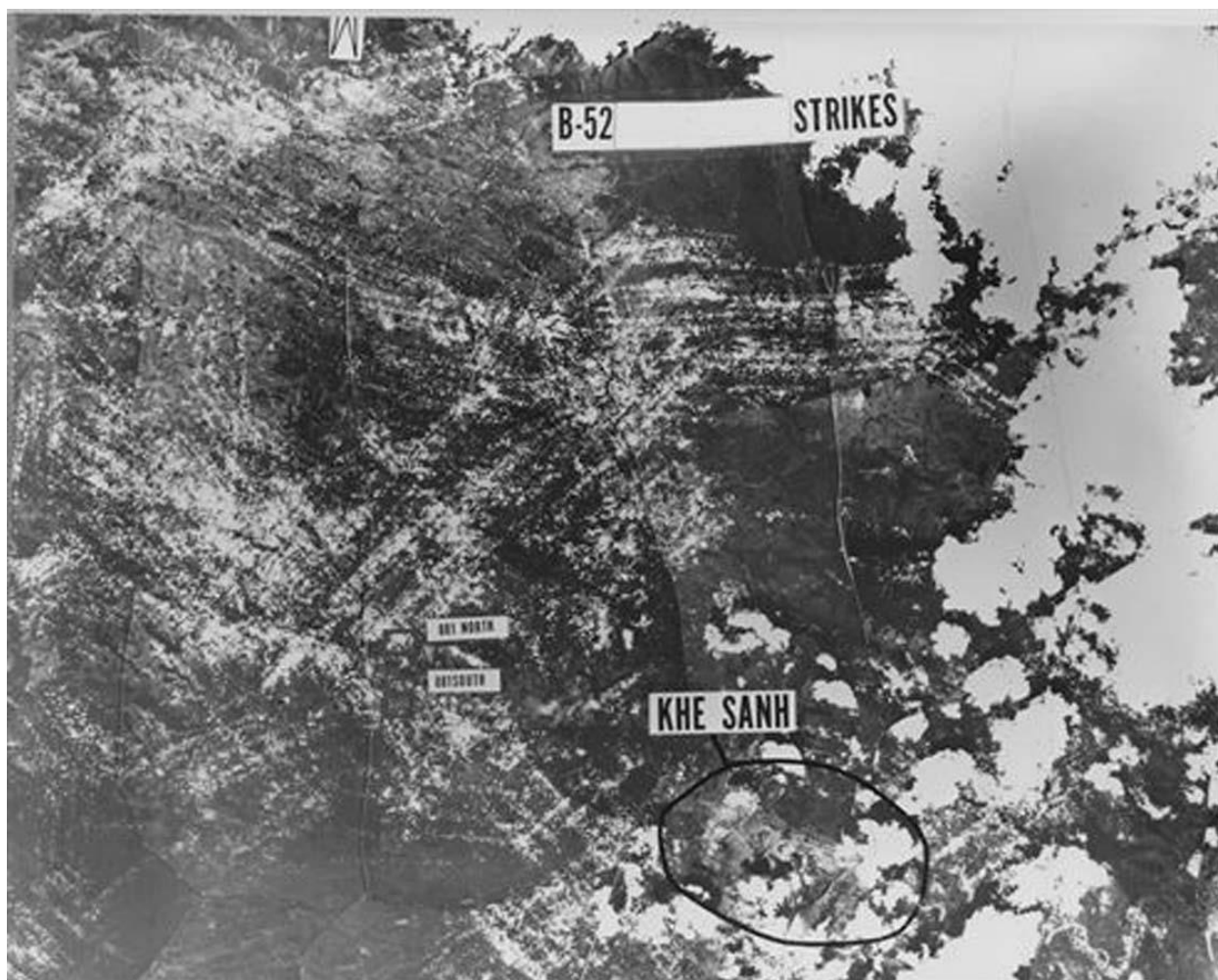


Figure 12. B-52 strike damage during the siege of Khe Sanh. Image Source: United States Air Force.

buffer zone. B-52s and TAC fighter-bombers both pounded a new buffer zone, slightly less than 300 yards from the outer perimeter.¹⁰³ The bomb was exceptionally accurate. The BUFFs conducted 589 close-in sorties with no damage to the Marines or their fortifications.¹⁰⁴ President Johnson stated that the Khe Sanh campaign was “the most overwhelming, intelligent, and effective use of airpower in the history of warfare.”¹⁰⁵ General Westmoreland concurred, “The thing that broke their back basically was the fire of the B-52s.”¹⁰⁶ A captured NVA officer, when interrogated, estimated that seventy-five percent of his 1,800-man regiment had been killed by a single ARC LIGHT strike.¹⁰⁷ As violent as the siege of Khe Sanh was, it was a precursor to the Tet Offensive of 1968.

¹⁰³ History, Seventh Air Force, 1 January–30 June 1968, xxii.

¹⁰⁴ Headquarters Seventh Air Force, “Weekly Air Intelligence Summary,” Report, no. 6819, 11 May 1968; Berger, 156–57.

¹⁰⁵ Schligh, 292

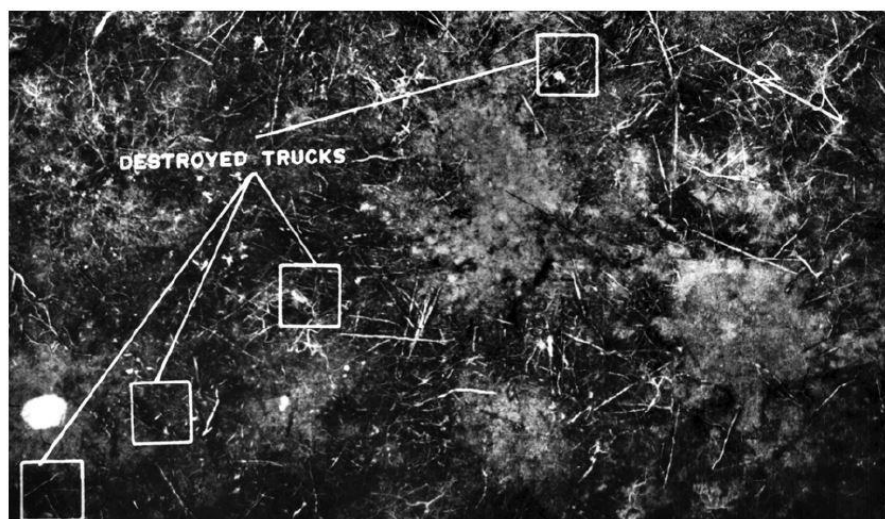
¹⁰⁶ Berger, 157.

¹⁰⁷ Ibid.



Figure 13. Craters from B-52 strikes in and near the Au Shau Valley. Image Source: United States Air Force.

From April to mid-summer, the B-52 supported a series of operations to interfere with massive troop convoys heading south on the Ho Chi Minh trail and in the Au Shau Valley in the Central Highlands west of Da Nang. These were followed by the major bombing of truck parks and storage areas along the Laotian border. The B-52 raids forced traffic backups and secondary raids hit the stalled convoys.¹⁰⁸ The air



Air Force aircraft destroyed these trucks on the Ho Chi Minh Trail.

Figure 14. Image Source: United States Air Force.

¹⁰⁸ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 276; History, Seventh Air Force 1 January–30 June 1968, xxiv; and Berger, 157, 160.



Figure 15. Operation ROLLING THUNDER theatre of operations, 1965-1968. Harry G. Summers, Jr. *Historical Atlas of the Vietnam War* (Boston, MA: Houghton Mifflin, 1995), 96.

raids combined with Army and Marine attacks thwarted the massive NVA ground attacks during the Tet Offensive. The NVA took massive casualties and the supply columns down the Ho Chi Minh trail were

either destroyed or substantially slowed. In spite of these gains, President Johnson called for a bombing halt on October 31, 1968 of North Vietnam in an effort to bring the North Vietnamese to the bargaining table and begin peace negotiations. This gave the NVA time to regroup and resupply. Micromanagement from the President, his Secretary of Defense, Secretary of State, and their staffs cost tens of thousands of American and South Vietnamese lives. All of this in an effort to persuade Chinese not to interfere and to allow the North Vietnamese to end the struggle that they wholeheartedly believed they could win.

The bombing halt had little effect in South Vietnam. ARC LIGHT missions continued until 1973 and, when Johnson decided not to run for an additional term, President Richard M. Nixon expanded secret bombing (MENU) into Cambodia during 1969 and 1970 and seven OPERATION COMMANDO HUNT interdiction missions into Laos between 1968 and 1972.¹⁰⁹

MENU Bombing

The Johnson Administration's air campaigns in the Vietnam War centered on ROLLING THUNDER and the B-52 ARC LIGHT missions. From 1965 to 1973, one million tons of munitions (twelve percent) were dropped on North Vietnam. Most of this was dropped south of the 20th parallel to exclude Hanoi and Haiphong. Four million tons were dropped on South Vietnam, three million tons on Laos, and 500,000 on Cambodia.¹¹⁰ In 1968, President Nixon was elected on a platform of ending the Vietnam War. Any expansion of ground or air campaigns would not be funded by Congress. 1968 was the year that America almost tore itself apart with race and draft riots. Anti-War protests were seen all across the Western world. Nixon's bombing missions were publicly announced as "one-time protective reaction strikes" in the Panhandle southern regions of North Vietnam.¹¹¹ The secret air war shifted to Cambodia and Laos, as well as South Vietnam beginning in 1969.¹¹²

Nixon's new Secretary of the Air Force, Robert C. Seamans, Jr., spoke to the Air Force Association (AFA) on March 19, 1969. He described what would later be called "Vietnamization" and placed U.S. foreign policy in a global context: "There seems to be a trend toward viewing all national questions in the context of the frustrating struggle against aggression in Vietnam...But there is no doubt that, however frustrated we are with the conflict in Vietnam, the cost of failure to provide adequate forces for our security could be infinitely higher than the cost of Southeast Asia."¹¹³

President Nixon began a new strategy to curtail North Vietnam's supply routes that continually moved westward as the U.S. bombed the Ho Chi Minh Trail. The secret bombing of neutral Cambodia was known as "the Menu Operations."¹¹⁴ Johnson's bombing halt allowed North Vietnam to regroup, send tens of thousands of soldiers and tens of millions of tons of supply south through Cambodia to the area closest

¹⁰⁹ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 276 ff.

¹¹⁰ Earl H. Tilford Jr., "Bombing Our Way Back Home: The Commando Hunt and Menu Campaigns of 1969–1973," in *Looking Back on the Vietnam War: A 1990s Perspective of Decisions, Combat, and Legacies*, ed. William Head and Lawrence Grinter (Westport, CN: Greenwood Press, 1993), 123–24.

¹¹¹ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 276 ff.

¹¹² Tilford, "Bombing Our Way Back Home", 122-24.

¹¹³ Secretary of the Air Force (SECAF) Robert C. Seamans Jr., address, 1969 Air Force Association Convention, Houston, TX, March 19, 1969; and "Continuing Cooperation between NASA and DOD," *Air Force Magazine*, May 1969, 100.

¹¹⁴ Henry A. Kissinger, *The White House Years* (Boston: Little, Brown and Co., 1979), 241–42.

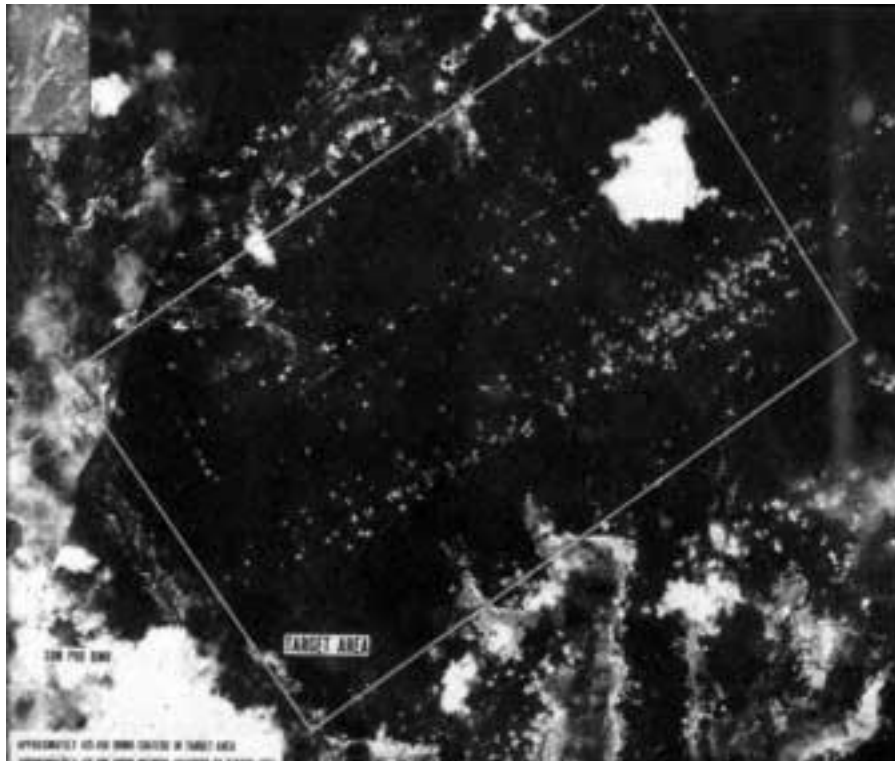


Figure 16. ARC LIGHT target box showing damage from B52 ordnance. Image Source: United States Air Force.

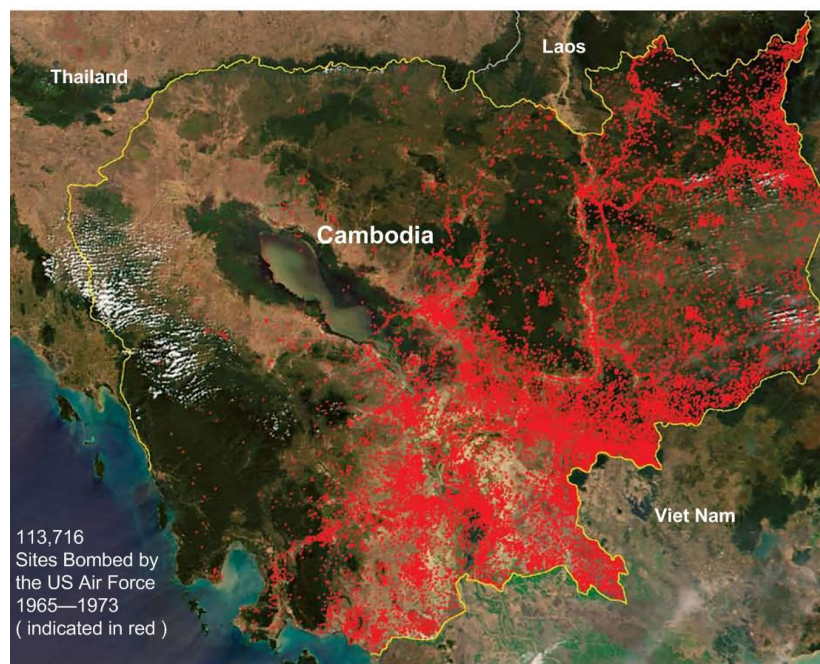


Figure 17. Extent of bombing in Cambodia during the Vietnam War. Bomb damage is in RED. Image Source: LANDSAT satellite image, United States Department of Defense.

to Saigon.¹¹⁵ The raids began on March 18, 1969 under the code name BREAKFAST, and dropped ordnance only three miles into Cambodia. Those three miles effectively killed Cambodian neutrality, although the North Vietnamese had effectively done so earlier by using Cambodian lands for extensions of their supply trails. Nixon ordered additional raids in May, code named (SUPPER, LUNCH, DESSERT and SNACK), thus the term MENU bombing.¹¹⁶ Nixon kept the operations secret from high level Air Force officials, the Air Force Chief of Staff, and the Secretary of the Air Force. Operational documents were falsified and required personnel were ordered to deceive their superiors under orders from the President.¹¹⁷ The MENU raids were halted after they were exposed by the *New York Times* on May 26, 1970.¹¹⁸ At the same time, the Cambodian Prime Minister, Norodom Sihanouk was overthrown. The Cambodian government then openly supported the United States. Cambodia joined in the war and the MENU operations became ARC LIGHT missions. Hindsight shows that the MENU operations possibly prevented a large-scale NVA attack.¹¹⁹

COMMANDO HUNT

President Johnson called his bombing halt of North Vietnam on October 31, 1968 and two weeks later on November 15, the first of seven COMMANDO HUNT operations began.¹²⁰ All targeted the Ho Chi Minh Trail segments. Each of the operations lasted six months and alternated from the winter/spring dry season (November–April) to summer/fall monsoon/wet season (May–September).¹²¹ The sorties were based upon the strengths of three types of aircraft. Truck convoys on the trail network were attacked by AC-119 and AC-130 gunships.¹²² Truck parks, river fords, bridges, and anti-aircraft and SAM sites were dedicated to TAC fighter-bombers using new laser-guided bombs.¹²³ The B-52s were most effective against stationary targets, particularly mountain passes and choke points filled with trucks waiting to head south.¹²⁴

The Seventh Air Force created one-square-mile target boxes as a norm for these missions.¹²⁵ The B-52s averaged twenty-seven sorties per day, in three-ship cells.¹²⁶ During COMMANDO HUNT V, the sortie rate increased to 125 sorties per day.¹²⁷ All sorties used the “Igloo White” sensor system, which monitored movement on the ground.¹²⁸ During 1968, B-52s supported COMMANDO HUNT with 838 sorties in Laos, and 156 sorties to support STEEL TIGER SOUTH with twenty-one sorties per day below 16° 30′ north latitude.¹²⁹ During May 1969, the BUFFs dropped 500 lb. and 750. Iron bombs, which caused massive mud slides in the mountain passes during the wet season.¹³⁰

¹¹⁵ Seamans, 129; Henry A. Kissinger, *The White House Years* (Boston: Little, Brown and Co., 1979), 241–42.

¹¹⁶ Berger, 160; Earl H. Tilford Jr., *Crosswinds: The Air Force's Setup in Vietnam* (College Station, TX: Texas A&M University Press, 1993), 125–26.

¹¹⁷ Tilford, *Crosswinds*, 126–27; John Morrocco, *Rain of Fire: Air War, 1969–1973*, ed., Robert Manning, Vietnam Experience Series (Boston: Boston Publishing Co., 1986), 12.

¹¹⁸ *New York Times*, May 26, 1970.

¹¹⁹ Kissinger, 240; Tilford, *Crosswinds*, 128.

¹²⁰ Berger, 109–19; Tilford, “Bombing Our Way Back Home,” 126–27.

¹²¹ Tilford, “Bombing Our Way Back Home,” 127–28.

¹²² see Jack S. Ballard, *The United States in Southeast Asia: Development and Employment of Fixed-Wing Gunships, 1962–1972* (Washington: AFHO, 1982).

¹²³ Berger, 109–19.

¹²⁴ Berger, 109–19; Tilford, “Bombing Our Way Back Home,” 126–27.

¹²⁵ CH, *A Chronology of Important Airpower Events in Southeast Asia*, 296.

¹²⁶ *Ibid.*

¹²⁷ PACAF, CH Report, “United States Air Force Operations in Laos: 1 Jan 70–30 Jun 71,” (Montgomery AL: Maxwell AFB, 1971), 25.

¹²⁸ J. William Gibson, *The Perfect War: Technowar in Vietnam* (Boston: Atlantic Monthly Press, 1986), 396–97.

¹²⁹ *Ibid.*

¹³⁰ Berger, 109–10.

The major obstacle to success in these operations was the thousands of NVA engineering troops placed at strategic points to repair the bomb damage within hours.¹³¹ While they negotiated in Paris during bombing halts, they massed troops for campaigns in both 1970 and 1972.¹³² COMMANDO HUNT VII (November 1, 1971 to March 31, 1972) used the greatest use of B-52s and also employed the latest airborne technology and weaponry.¹³³

COMMANDO HUNT operations ceased on March 31, 1972, after North Vietnamese General Vo Nguyen Giap launched the Easter Offensive by invading South Vietnam as he did during the Tet Offensive in 1968. SAC, TAC, and the Navy simply did not have enough aircraft and crews to keep the enemy at bay in Laos and Cambodia while stemming the tide in South Vietnam.¹³⁴

Table 2. Source: Kamps, “*The JCS Target List*, 73-76.

The Joint Chiefs of Staff 94 Target List in North Vietnam	
Target Number	Target Description
1	Na San airfield
2	Dien Bien Phu airfield
3	{B} Hanoi/Gia Lam airfield [limited jet-capable] (plus petroleum, oil, lubricants [POL] storage 1965)
4	{R} Dong Hoi airfield [limited jet-capable] (airfield closest to South Vietnam)
5	{R} Vinh airfield [limited jet-capable]
6	{B} Phuc Yen airfield Uet-capable] (plus NNE POL storage 1966)
7	Hanoi/Bae Mai airfield [limited jet-capable]
8	{B} Haiphong/Cat Bi airfield Uet-capable] (plus POL storage 1965)
9	Haiphong/Kien An airfield [limited jet-capable] (plus POL storage 1965)
10	Ninh Binh railroad/highway bridge
11	Hai Duong railroad/highway bridge
12	Hanoi railroad/highway bridge (Red River)
13	Hanoi railroad/highway bridge (canal)
14	Thanh Hoa railroad/highway bridge
15	Viet Tri railroad/highway bridge (on Route 2: Hanoi- Lao Cai- Kunming, China)
16	Dap Cau railroad/highway bridge (on route from Hanoi to Chinese border)
17	Haiphong highway bridge (on Route 10: Haiphong to NE ORV and China)
18	Lang Son railroad/highway bridge
19	Yen Vien railroad yard
20	Hanoi railroad repair shops (Gia Lam)
21	Hanoi railroad yard/shops
22	Xuan Mai barracks SSW
23	Xuan Mai barracks NNW and headquarters
24	{R} Chanh Hoa barracks SE and division headquarters
25	Son La barracks/supply depot/military region headquarters NW
26	Dien Bien Phu barracks

¹³¹ Douglas Pike, *PAVN: People's Army of North Vietnam* (Novato, CA: Presidio Press, 1986), chap. 1 and Conclusion.

¹³² Ibid.

¹³³ Head, *War From Above the Clouds*, 49.

¹³⁴ Eduard Mark, *Aerial Interdiction: Air Power and Land Battle in Three American Wars* (Washington: Center for Air Force History, 1994), 329.

(27)	(Although in the "barracks" group, a target numbered 27 did not appear in any sources consulted.)
28	Ban Xom Lorn barracks
29	Quang Suoi barracks NE
30	Hanoi military headquarters; North Vietnam air defense headquarters
31	Ha Dong barracks/supply depot
32	{R} Vu Con barracks and supply depot
33	{R} Vu Con barracks and supply depot
34	Vinh Yen barracks /training area N
35	Son Tav barracks SW and supply depot
36	{B} {R} Vit Thu Lu barracks/storage area (guerrilla staging area)
37	Moc Chau barracks
38	Vinh barracks and headquarters military region IV
39	Vinh barracks and headquarters military region IV
40	Phu Qui ammunition depot SW
41	{R} Phu Van ammunition depot E (major depot)
42	{R} Phu Van POL storage and ammunition depot NE
43	Qui Hau ammunition depot W
44	Yen Bai ordnance depot
45	Haiphong ammunition depot SW (Kien An)
46	Ban Phieng Hay ammunition depot
47	Yen Son ordnance and ammunition depot
48	{B} Haiphong POL storage[+] (largest POL storage facility in North Vietnam)
49	{B} Hanoi POL storage[+]
50	Vinh POL storage
51	Nguyen Khe POL storage[+] (Thach Loi)
52	{R} Vinh supply depot E
53	{R} Phu Van supply depot SE
54	Thien Linh Dong supply depot S
55	{R} Vinh Son supply depot SW/SE
56	Phu Qui barracks/supply depot
57	Hanoi Ministry of National Defense/MZ Headquarters
58	Hanoi supply depot S/barracks
59	Hanoi supply depot N/barracks
60	Thai Nguyen supply depot N
61	Xom Chang barracks S
62	Van Dien supply depot/barracks
63	Thuan Chau barracks/supply depot
64	{R} Xom Bang ammunition depot (supports Pathet Lao in Laotian panhandle)
(65)	(Although in the "depot" group, a target numbered 65 did not appear in any sources consulted. In a later edition of the list, the number 65.8 was reserved for the Hanoi SAM support facility.)
66	Hanoi international radio communications transmitter facility
67	Hanoi international radio communications receiver facility
68	Cam Pha Port (mine laying and bombing targets)
69	Hon Gai Port (mine laying and bombing targets)
70	Haiphong Port (mine laying and bombing targets)
71	{R} Ben Thuy port facilities/transshipment center (mine laying and bombing targets)
72	Port Wallut naval base (mine laying and bombing targets)
73	Hanoi port facilities/Red River (mine laying and bombing targets)

74	Quang Khe Port approaches (mine laying area)
75	Viet Tri chemical plant (explosives)
76	Thai Nguyen iron and steel complex
77	Hanoi machine tool and engineering equipment plant
78	Haiphong phosphatic fertilizer plant (explosives)
79	Bae Giang chemical fertilizer plant (explosives)
80	Haiphong West thermal power plant[++]
81	Hanoi thermal power plant[++]
82	Uong Bi thermal power plant
83/84	Road/Rail Route 1 (Hamrong to Hanoi)
85/86	Road /Rail Route 1 (Vinh to Hamrong)
87/88	Road/Rail Route 5 (Hanoi to Haiphong)
89	Route 7 (Laos/North Vietnam border)
90	Route 8 (vicinity Nape, Laos to Roa Qua) (main supply route to Central Laos)
91	Route 12 (Laos/North Vietnam border to Xom Ma Na) (main supply route into southern Laos and South Vietnam)
92	Route 19
93	Route 6
94	Route alternate to Route 6

Table 3. Source: Kamps, “*The JCS Target List*, 77.

Target Complexes

2 jet-capable airfields	7 ports and port approaches
5 limited jet-capable airfields	2 railroad repair facilities
2 non-jet-capable airfields	2 railroad yards
2 communications facilities	8 railroad/highway bridges
9 headquarters	1 highway bridge
22 barracks	3 railroad armed-reconnaissance routes
1 training area	9 highway armed-reconnaissance routes
2 ordnance depots	1 iron and steel plant
8 ammunition depots	1 machine tool plant
5 POL storage facilities	3 chemical/fertilizer plants (explosives)
1 storage area	3 thermal power plants
14 supply depots	

Table 4. ARC LIGHT B-52 Bases. Source Walter J. Boyne, “Linebacker II,” *Air Force Magazine*; January 2009, 62.

Arc Light B-52 Organizations P=Provisional		
Andersen AFB, Guam		
1954-70	3rd Air Div	Hq for B-52 units at Andersen, U Tapao, and Kadena
1970-75	8th Air Force	Replaced 3rd Air Div as hq for Arc Light
1955-70	3960th Strategic Wg	SAC unit from pre-Vietnam period. Replaced by 43rd SW
1966-70	4133rd Bomb Wg (P)	Formed to receive rotational crews, inactivated 1970 when 43rd SW formed
1970-79	43rd Strategic Wg	Replaced 3960th SW when B-52 missions from Guam resumed in 1972, reported to 57th Air Div (P), continued as operating unit at Andersen until 1989
1972-73	57th Air Div (P)	Controlled both B-52 Arc Light wings on Guam
1972-73	72nd Strategic Wg (P)	Reported to 57th AD (P)
1972-73	303rd Consolidated Aircraft Maint Wg (P)	Reported to 57th AD (P)
U Tapao RTNAF, Thailand		
1966-70	4258th Strategic Wg	Reported to 3rd Air Div on Guam; in 1970, redesignated as 307th
1970-74	307th Strategic Wg	For last part of war, reported to 17th AD (P)
1972-74	17th Air Div (P)	Reported to 8th AF on Guam
1972-74	310th Strategic Wg (P)	Reported to 17th AD (P)
1972-74	340th Consolidated Aircraft Maint Wg (P)	Reported to 17th AD (P)
Kadena AB, Okinawa		
1965-70	4252nd Strategic Wg	
1970-74	376th Strategic Wg	Replaced 4252nd SW; did not fly Arc Light combat missions

BIBLIOGRAPHY

- Ballard, Jack S. *The United States in Southeast Asia: Development and Employment of Fixed-Wing Gunships, 1962–1972*. Washington, D.C.: AFHO, 1982.
- Berger, Carl. ed. *The United States Air Force in Southeast Asia, 1961–1973: An Illustrated Account*. Washington, D.C.: AFHO, 1984.
- Blaufuss, Philip, Interviewed by Gary D. Joiner, Ph.D. and Ashley Dean, September 12, 2017.
- Boyne, Walter J., “Linebacker II,” *Air Force Magazine*; January 2009
- Cable, Larry. *Unholy Grail: The U.S. and the Wars in Vietnam, 1965–1968*. London: Routledge, 1991.
- Correll, John T., “Arc Light: The B-52s fought their war in Vietnam without ever leaving SAC” *Air Force Magazine*: January 2009, 58-62.
- Cosmas, Graham A. *The Joint Chiefs of Staff and the War in Vietnam*. Washington, D.C.: Office of Joint History, 2012.
- Director of Operations, DCS, Plans and Operations, Headquarters USAF, study, “Analysis of B-52 Conventional Operations in SEA,” October 29, 1965.
- Drew, Col Dennis M. *Rolling Thunder 1965: Anatomy of a Failure*. Maxwell Air Force Base, AL: Air and Command Staff College, Air University, 1986.
- _____. “Vietnam, ‘Wars of the Third Kind’ and Air Force Doctrine,” paper presented at Texas Tech University Center for the Study of the Vietnam Conflict, seminar on the Vietnam War, 18–21 April 1996.
- Futrell, Robert F. *A Chronology of Important Airpower Events in Southeast Asia, 1950–1968*. Maxwell Air Force Base, AL: Aerospace Studies Institute, Air University, May 1, 1969.
- _____. *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907–1964*. Maxwell Air Force Base, Montgomery AL: Air University Press, 1974.
- Gibson, J. William. *The Perfect War: Technowar in Vietnam*. Boston: Atlantic Monthly Press, 1986.
- Guilmartin, Jr., John F. “Arc Light,” *Encyclopedia of the Vietnam War*. Stanley I. Kutler, ed. New York: Charles Scribner’s Sons, 1996.
- Hall, R. Cargill, ed. *Case Studies in Strategic Bombardment*. Washington, D.C.: Air Force History and Museums Program, 1998.
- Head, William P. *War From Above the Clouds: B-52 Operations during the Second Indochina War and the Effects of the Air War on Theory and Practice*. Maxwell Air Force Base, AL: Air University Press, 2002.
- Kamps, Charles Tustin. *The JCS Target List: A Vietnam Myth That Distorts Military Thought, Air and Space Power Journal*. Montgomery, AL: Maxwell Air Force Base, 2001.

- Kissinger, Henry A. *The White House Years*. Boston: Little, Brown and Co., 1979.
- Korb, Lawrence J. *The Joint Chiefs of Staff: The First Twenty-Five Years*. Bloomington, Ind.: University of Indiana Press, 1976.
- Library of Congress, "President Johnson and his military advisers in the White House," Image, 1968.
- Long, Lt Col William. *Target Selection Process*. Maxwell Air Force Base, AL: Air University Press, 1968.
- MacKinlay, Kantor. *Mission With LeMay*. Garden City, NY: Doubleday 1965.
- Mark, Eduard. *Aerial Interdiction: Air Power and Land Battle in Three American Wars*. Washington, D.C.: Center for Air Force History, 1994.
- Mason, Jr., Hubert Molloy. *The United States Air Force: A Turbulent History*. New York: Mason/Charter, 1976.
- McMcMaster, H.R. *Dereliction of Duty: Lyndon Johnson, Robert McNamara, The Joint Chiefs of Staff, and the Lies That Led to Vietnam*. New York: HarperCollins, 1997.
- McNamara, Robert S. and Brian VanDeMark. *In Retrospect: The Tragedy and Lessons of Vietnam*. New York: Vintage Books, 1995.
- Michel III, Marshall L. *The 11 Days of Christmas: America's Last Vietnam Battle*. New York: Encounter Books, 2001.
- Momyer, William W. *Air Power in Three Wars*. Washington, D.C.: GPO, 1978.
- Morocco, John. *Rain of Fire: Air War, 1969–1973*, ed., Robert Manning, Vietnam Experience Series. Boston: Boston Publishing Co., 1986.
- Nalty, Bernard C. *Air War over South Vietnam*. Washington, D.C.: Air Force History and Museums Program, 2009.
- New York Times*, May 26, 1970.
- PACAF, CH Report. *United States Air Force Operations in Laos: 1 Jan 70–30 Jun 71*. Montgomery AL: Maxwell AFB, 1971.
- Palmer, Bruce. *Grand Strategy for the 1980s*. Washington, D.C.: American Enterprises Institute for Public Policy Research, 1978.
- Patrick, Joe, "Air Force Colonel Jacksel 'Jack' Broughton & Air Force General John D. 'Jack' Lavelle: Testing the Rules of Engagement During the Vietnam War," *Vietnam Magazine*, December 1997.
- Pike, Douglas. *PAVN: People's Army of North Vietnam*. Novato, CA: Presidio Press, 1986.
- Porter, Capt Melvin. *Interdiction in Southeast Asia, 1965-1966*. Project CHECO, Southeast Asia Monograph Series, 1966.

- Record, Jeffrey. *The Wrong War: Why We Lost in Vietnam*. Annapolis, MD: Naval Institute Press.
- Seamans Jr., Robert C., Secretary of the Air Force, address, "Continuing Cooperation between NASA and DOD," 1969 Air Force Association Convention, Houston, TX, March 19, 1969.
- Schandler, Col Herbert Y., "The President, the Secretary of Defense, and the Joint Chiefs of Staff: The Political Direction of the War," paper presented to the 1996 Vietnam Symposium, Texas Tech University, April 18, 1996.
- Schlight, John. *The Air War in South Vietnam: The Years of the Offensive, 1965–1968*. Washington, D.C.: AFHO, 1988.
- Seventh Air Force, "History, 1 July–31 December 1967."
- Seventh Air Force, "History, 1 January–30 June 1968."
- Seventh Air Force, "Weekly Air Intelligence Summary," Report, no. 6819, 11 May 1968.
- Sheehan, Neil, et al. *The Pentagon Papers as Published by the New York Times*. New York: The New York Times & Bantam Books, 1971.
- Strategic Air Command, "Activity Input to Project Corona Harvest, Arc Light," Offutt AFB, NB.: SAC/History Office, 1970.
- Strategic Air Command, "History, January–June 1966."
- Strategic Air Command, "History, January–June 1967."
- Strategic Air Command, "History, July–December 1967."
- Summers, Jr., Harry G. *Historical Atlas of the Vietnam War*. Boston, MA: Houghton Mifflin, 1995.
- The Gulf of Tonkin Resolution, August 10, 1964.
- Tilford Jr., Earl H. *Crosswinds: The Air Force's Setup in Vietnam*. College Station, TX: Texas A&M University Press, 1993.
- _____. *SETUP: What the Air Force Did in Vietnam and Why*. Maxwell Air Force Base, AL: Air University Press, 1991.
- _____. "Bombing Our Way Back Home: The Commando Hunt and Menu Campaigns of 1969–1973," *Looking Back on the Vietnam War: A 1990s Perspective of Decisions, Combat, and Legacies*. William Head and Lawrence Grinter, eds. Westport, CN: Greenwood Press, 1993.
- Wilcox, Christopher M. *Lessons from Vietnam: Should B-52 Squadrons Perform Both Nuclear and Conventional Mission?* Maxwell Air Force Base, AL: Air and Command Staff College, Air University, 2009.
- Wood, Lee, "ARC LIGHT Route Packages," airbattle.co.uk.