NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

DEFENSE ANALYSIS CAPSTONE PROJECT REPORT

LOOKING UP: CONDITIONS FOR INSURGENT AIRPOWER IN UNCONVENTIONAL WARFARE

by

Ryan Olish
William J. Morgan

December 2017

Thesis Advisor: Hy Rothstein
Second Reader: Brian Greenshields

Approved for public release. Distribution is unlimited.

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704–0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE December 2017	3. REPORT TYPE AND DATES COVERED Capstone project report

4. TITLE AND SUBTITLE LOOKING UP: CONDITIONS FOR INSURGENT AIRPOWER IN UNCONVENTIONAL WARFARE	5. FUNDING NUMBERS
6. AUTHOR(S) Ryan Olish and William J. Morgan	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) 492d Special Operations Wing Duke Field, FL	10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB number ____N/A____.

12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release. Distribution is unlimited.	12b. DISTRIBUTION CODE

13. ABSTRACT (maximum 200 words)

Unconventional warfare (UW) is an operational concept the United States utilizes to enable resistance movements or insurgencies to coerce or overthrow a government or occupying power. The concept has historically involved the employment of U.S. advisors to increase insurgent capabilities on the ground to combat an enemy government's forces. However, though military doctrine also mentions the development of insurgent air capabilities, it does not expound on the idea. This study examines the conditions needed to build an insurgent air capability and the principles that should guide the employment of that capability. Using military doctrine and other relevant literature to merge principles of UW, insurgencies, and air operations, the study forms theorized conditions and employment imperatives for insurgent air. It then tests these theorized conditions and imperatives against two historic case studies, Hmong pilots in Laos and the Tamil Air Tigers in Sri Lanka. This study concludes that there are four conditions that the United States should consider prior to developing an insurgent air capability and two imperatives that should govern the employment of that capability.

14. SUBJECT TERMS airpower, unconventional warfare, insurgency, resistance movement, Laos, Sri Lanka, Hmong, Tamil Tigers	15. NUMBER OF PAGES 93
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UU

NSN 7540–01-280-5500 Standard Form 298 (Rev. 2–89) Prescribed by ANSI Std. 239–18

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release. Distribution is unlimited.

LOOKING UP: CONDITIONS FOR INSURGENT AIRPOWER IN UNCONVENTIONAL WARFARE

Maj Ryan Olish, USAF MAJ William J. Morgan, USA

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN DEFENSE ANALYSIS

from the

NAVAL POSTGRADUATE SCHOOL
December 2017

Reviewed by:

Hy Rothstein, Ph.D.
Project Advisor

Brian Greenshields, Colonel (Ret)
Second Reader

Accepted by:

John Arquilla, Ph.D.
Chair, Department of Defense Analysis

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

Unconventional warfare (UW) is an operational concept the United States utilizes to enable resistance movements or insurgencies to coerce or overthrow a government or occupying power. The concept has historically involved the employment of U.S. advisors to increase insurgent capabilities on the ground to combat an enemy government's forces. However, though military doctrine also mentions the development of insurgent air capabilities, it does not expound on the idea. This study examines the conditions needed to build an insurgent air capability and the principles that should guide the employment of that capability. Using military doctrine and other relevant literature to merge principles of UW, insurgencies, and air operations, the study forms theorized conditions and employment imperatives for insurgent air. It then tests these theorized conditions and imperatives against two historic case studies, Hmong pilots in Laos and the Tamil Air Tigers in Sri Lanka. This study concludes that there are four conditions that the United States should consider prior to developing an insurgent air capability and two imperatives that should govern the employment of that capability.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I. BACKGROUND AND FRAMING 1
- A. INTRODUCTION TO THE STUDY 1
- B. THE PROBLEM 2
- C. PURPOSE AND SCOPE 2
- D. RESEARCH QUESTION 3
- E. LITERATURE REVIEW: INTRODUCING THE TERMS AND CONCEPTS 3
  - 1. Resistance Movements and Insurgencies 3
  - 2. Introduction to Unconventional Warfare and Its Necessary Conditions 6
  - 3. Review of Insurgent Airpower 8
  - 4. Review of Air Operations 9
  - 5. Summary 12
- F. DEVELOPMENT OF CONDITIONS AND IMPERATIVES 12
- G. METHODOLOGY 16
- H. LIMITATIONS TO THE STUDY 18

II. CASE STUDY: LAOS AND OPERATION WATERPUMP 19
- A. INTRODUCTION 19
- B. THE SITUATION IN LAOS 20
- C. BACKGROUND ON THE INSURGENCY 21
- D. GENERAL INSURGENT AVIATION DEVELOPMENT 26
- E. GENERAL INSURGENT AVIATION EMPLOYMENT 31
- F. THEORIZED AIR UW CONDITIONS AND IMPERATIVES ANALYSIS 37

III. CASE STUDY: THE TAMIL TIGERS 43
- A. INTRODUCTION 43
- B. THE SITUATION IN SRI LANKA 44
- C. BACKGROUND ON THE INSURGENCY 45
- D. GENERAL INSURGENT AVIATION DEVELOPMENT 50
- E. GENERAL INSURGENT AVIATION EMPLOYMENT 53
- F. THEORIZED AIR UW CONDITIONS AND IMPERATIVES ANALYSIS 57

IV. CONCLUSIONS 63
- A. INTRODUCTION 63

B. RESTATED RESEARCH QUESTION.....63
C. RESTATED LIMITATIONS TO THE STUDY.....63
D. THEORIZED CONDITION 1.....64
E. THEORIZED CONDITION 2.....64
F. THEORIZED CONDITION 3.....65
G. THEORIZED CONDITION 4.....66
H. THEORIZED CONDITION 5.....67
I. THEORIZED IMPERATIVE 1 67
J. THEORIZED IMPERATIVE 2 68
K. CONCLUSION 69
L. NOTEWORTHY OBSERVATIONS.....70
M. AREAS OF FUTURE STUDY 71

LIST OF REFERENCES.....73

INITIAL DISTRIBUTION LIST 77

LIST OF FIGURES

Figure 1. Laos's Location within Southeast Asia.....19

Figure 2. Map of Communist Occupation from Redacted Report 24

Figure 3. Map Showing Long Tieng and Muong Soui to the Northeast of Vientiane. 34

Figure 4. Extent of LTTE Territorial Control in Sri Lanka.....43

Figure 5. Map of LTTE-Held Territory in Sri Lanka, 2005–2009.....53

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

Table 1. Summary of Theorized Conditions and Imperatives for Insurgent Air Capability. 16

Table 2. Finalized Conditions and Imperatives for an Insurgent Air Capability.....70

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

AFDD	Air Force Doctrine Document
AFSOC	Air Force Special Operations Command
AI	air interdiction
ATP	Army Techniques Publication
CAS	close air support
CIA	Central Intelligence Agency
C2	command and control
DOD	Department of Defense
FAR	Royal Laotian Armed Forces
FID	foreign internal defense
GoSL	Government of Sri Lanka
IO	information operations
IPKF	Indian Peacekeeping Force
JP	Joint Publication
LAAF	Laotian Army Air Force
LTTE	Liberation Tigers of Tamil Eelam (Sri Lanka)
NVA	North Vietnamese Army
RLAF	Royal Laotian Air Force
SGU	Special Guerrilla Units (Laos)
SLA	Sri Lanka Army
SLAF	Sri Lanka Air Force
TC	Training Circular
TELO	Tamil Eelam Liberation Organization
USAF	United States Air Force
UW	unconventional warfare

THIS PAGE INTENTIONALLY LEFT BLANK

I. BACKGROUND AND FRAMING

A. INTRODUCTION TO THE STUDY

The concept of unconventional warfare (UW) offers the United States a valuable military approach when it wishes to avoid the employment of its conventional forces. The Joint Chiefs define UW in Joint Publication (JP) 3-5, *Special Operations* as

> activities conducted to enable a resistance movement or insurgency to coerce, disrupt, or overthrow a government or occupying power by operating through or with an underground, auxiliary, and guerrilla force in a denied area.[1]

The United States uses this operational concept when the success of an insurgency or resistance movement serves a U.S. strategic interest. Traditionally, U.S. Army Special Forces act as the official specialists for UW. U.S. Special Forces teams deploy in small advisory elements to aid an insurgency or resistance movement in its efforts against an enemy state or occupying power. Although the Department of Defense (DOD) acknowledges UW may involve a high level of risk, the United States maintains this capability because the UW concept requires fewer personnel and less equipment than conventional military methods.[2] The United States employs the UW option when it must act militarily against a perceived threat but will not risk the cost of a conventional military campaign.

In the past, much of the air support during UW efforts consisted of conventional air support methods. These instances include U.S. aerial resupply to French partisans and their Allied advisors during World War II, as well as combat support to the Afghan Northern Alliance and U.S. Special Forces Teams in 2001.[3] Despite its support to UW,

---

[1] Joint Chiefs of Staff, *Special Operations,* JP-3-05 (Joint Chiefs of Staff, 2016), http://dtic.mil/doctrine/new_pubs/jp3_05.pdf, GL-12.

[2] Department of the Army, *Unconventional Warfare,* ATP No. 3-05.1 (Washington, DC: United States Army, 2013), 1-2.

[3] Scott Hartman, "Airpower Support of Unconventional Warfare" (master's thesis, U.S. Army Command and General Staff College), 32, http://handle.dtic.mil/100.2/ADA512516; Hy Rothstein, *Afghanistan And The Troubled Future Of Unconventional Warfare* (Annapolis, MD: Naval Institute Press, 2006), 9.

these Air Force operations did not require skills beyond those that conventional Air Force pilots already possessed. Thus, if anything obstructs the United States Air Force's use of conventional airpower during future UW efforts, the Air Force will possess limited means to provide air support to UW. This study explores possibilities for the Air Force to support UW beyond the traditional approach.

B. THE PROBLEM

United States Special Operations Command directed Air Force Special Operations Command (AFSOC) to examine its current capacity to perform UW tasks and identify any capability it may need to develop to do so. The unclassified examination revealed that AFSOC does not possess the institutional knowledge or doctrinal framework to advise insurgents during a UW campaign.[4] During this review, AFSOC noted that it has no process in place to cultivate an insurgent air capability that would be similar to the process that U.S. Special Forces use to develop insurgent ground units. The Air Forces' 6th Special Operations Squadron maintains Combat Aviation Advisors who train foreign aviation forces, but the preponderance of these operations are Foreign Internal Defense (FID), an operational approach that involves the training of foreign governments, not insurgencies. Although similar to UW advisory roles, AFSOC advisors may need to adjust the approach they use for FID to conduct UW advisory missions. AFSOC is working to rectify this gap in UW knowledge and capability.

C. PURPOSE AND SCOPE

This capstone study intends to help AFSOC formulate a doctrinal framework for advisory efforts during UW. To do so, this study will first examine what conditions need to be present within a UW environment for AFSOC to develop an insurgent air capability and, second, how UW advisors should employ it. The authors of this study view this topic as a starting point for AFSOC and do not address emerging technologies.

[4] Major Olish participated in this review from September 2015 to July 2016 as a staff officer in the Operations Directorate at AFSOC.

D. RESEARCH QUESTION

What are the conditions under which the United States should develop an insurgent air capability during a UW campaign and how should that capability be employed?

E. LITERATURE REVIEW: INTRODUCING THE TERMS AND CONCEPTS

This capstone will explore the theory and doctrine associated with insurgencies, UW, and air operations. Although a large array of literature covers UW, this study focuses strictly on the development and employment of an insurgent air capability. Thus, this section will review how military doctrine and academic studies address insurgent airpower. In addition, it will use the literature to present information relevant to understanding how insurgencies, UW, and air operations work. This review will then contribute to the development of theorized conditions needed for an insurgent air capability and imperatives for its employment.

1. Resistance Movements and Insurgencies

UW supports two types of movements, resistance movements and insurgencies. Although similar, they each have distinct definitions. JP 3-24, *Counterinsurgency*, defines insurgency as "the organized use of subversion and violence to seize, nullify, or challenge political control of a region. Insurgency can also refer to the group itself."[5]

Whereas JP 3-5 defines a resistance movement as "an organized effort by some portion of the civil population of a country to resist the legally established government or an occupying power and to disrupt civil order and stability."[6]

JP 3-5 clarifies the difference with the explanation that an insurgency uses armed forces and a resistance may not.[7] As a result, this study will use only the term insurgency.

---

[5] Joint Chiefs of Staff, *Counterinsurgency*, JP-3-24 (Joint Chiefs of Staff, 2013), http://dtic.mil/doctrine/new_pubs/jp3_24.pdf, II-1.

[6] Joint Chiefs of Staff, *Special Operations*, GL-10.

[7] Joint Chiefs of Staff, *Special Operations*, II-8.

The methodology used in this study will assess two historic cases to test its theorized conditions and imperatives, the Hmong tribe in Laos and Tamil Tigers in Sri Lanka. Both of these cases involved armed conflict, which makes the term insurgency more applicable to this study.

Insurgencies occur frequently and are often long lasting, therefore governments struggle to contain them once they start. Chris Paul notes in *Paths to Victory: Lessons From Modern Insurgencies*, that 39 insurgencies have occurred throughout the world since the mid-1980s.[8] In Paul's review of insurgencies, he observes that they began with a grievance within the population, which developed into organized revolutions against the state. Additionally, Ben Connable and Martin Libicki explain in *How Insurgencies End*, that an insurgency lasts a median length of ten years.[9]

Once an insurgency begins, insurgent leaders must balance their need to expand their influence while avoiding the state's counterinsurgent measures. In, "Things Fall Apart: The Endgame Dynamics of Internal Wars," Gordon McCormick, Steven Horton, and Lauren Harrison explain the risks that an insurgency must consider as it builds its strength. McCormick et al. note that the state and insurgency start the conflict with different strengths: the force advantage for the former, and the information advantage for the latter.[10] The state has more capacity to control the country, yet it is also more visible so it is easier for the insurgency to target state personnel and infrastructure. Conversely, the insurgency is smaller and hidden among the population, so it is less visible to the state. Therefore, the insurgency has an information advantage over its state adversary. In addition, McCormick notes that the insurgency's force strength is so limited that its expenditure of resources must be deliberate if it is to expand its influence over the population while minimizing its visibility to the state. Once the insurgency becomes more

---

[8] Christopher Paul, *Paths to Victory* (Santa Monica, CA: RAND Corporation, 2013), vi-vii.

[9] Ben Connable and Martin C Libicki. *How Insurgencies End* (Santa Monica, CA: RAND Corporation), 2010, XII.

[10] Gordon H. McCormick, Steven B. Horton, and Lauren A. Harrison. "Things Fall Apart: The Endgame Dynamics of Internal Wars,"*Third World Quarterly* 28, no. 2 (Mar. 1, 2007): 321-367. doi:10.1080/ 01436590601153721.

visible to the state, the state can deploy its forces against it. If the insurgency provokes this response before it has the ability to defend against the state's countermeasures, then it will risk annihilation.[11]

Generally, successful insurgencies follow a three-phase model that helps them balance their need to remain discreet while they build their force strength. Army Techniques Publication (ATP) 3-5.1, *Unconventional Warfare,* codifies the three phases as Latent and Incipient, Guerrilla Warfare, and War of Movement.[12] The ATP credits Chinese revolutionary Mao Tse-Tung as the originator of this framework.[13] During the Latent and Incipient Phase, the insurgency focuses on recruitment of members and development of clandestine networks. The insurgency progresses to the Guerrilla Warfare Phase when it achieves enough force strength to execute sabotage and short duration military operations against state personnel and infrastructure. Finally, the insurgency advances to the War of Movement Phase when it possesses enough force strength to "bring about the collapse of the established government or withdrawal of the occupier."[14] These phases are fluid and linear, as the insurgency slowly increases activity as it expands its force strength and influence.

Lastly, an insurgency uses four distinct components to confront the state or occupying force. JP 3-5.1, *Unconventional Warfare,* presents these components as the guerrilla force, underground, auxiliary, and public component. The guerrilla force, the military arm of the insurgency, conducts short-duration sabotage and ambush operations. As the force grows larger, the guerrilla component transitions into conventional military operations.[15] The underground is a cellular network that conducts operations within state-controlled territory that the guerrilla force cannot. It can act as a shadow government or

---

[11] McCormick et al., "Things Fall Apart: The Endgame Dynamics of Internal Wars," 9.

[12] Department of the Army, *Unconventional Warfare,* 2-6.

[13] Department of the Army, *Unconventional Warfare,* 2-6.

[14] Department of the Army, *Unconventional Warfare,* 2-7.

[15] Joint Chiefs of Staff, *Unconventional Warfare,* JP-3-05.1 (Joint Chiefs of Staff, 2015), I-9.

simply be a support element that provides intelligence and conducts subversive actions.[16] The auxiliary refers to segments of the population that provide clandestine or covert logistical support to the underground and guerrillas.[17] Finally, the public component performs as the overt political group that handles negotiations with the state on behalf of the insurgency.[18] The insurgent command compartmentalizes each of these elements yet it synchronizes their actions to maintain unity of effort.[19]

2. Introduction to Unconventional Warfare and Its Necessary Conditions

U.S. Joint and Army doctrine all agree on several principles of UW. JP 3-5.1, JP 3-5, ATP 3-5.1, and Training Circular (TC) 18–01 constitute the collective Joint and Army publications that address UW. Although they hold different publication dates, they mirror each other with regard to the conditions needed for UW and how the United States executes UW. This section will review the trends within these sources and discuss how specific doctrinal publications outline the requirements for UW operations.

First, the United States executes two types of UW. In the first type, UW is a line of operation within a larger campaign. In this case, the United States employs a UW strategy in one part of a conflict zone as a supporting effort to a larger conventional military campaign. In the second type, U.S. advisors are employed as the main effort. The United States exercises this type of UW when it desires to maintain both discretion and non-attribution of U.S. intervention in a theater. The timing and requirements of a UW effort depend on conditions in the UW area of operations. If the UW effort is in support of a larger campaign, timing will likely be synchronized with conventional timelines. If the UW operation is the main effort, then it may have more time to develop the situation.

---

[16] Joint Chiefs of Staff, *Unconventional Warfare*, I-8.

[17] Joint Chiefs of Staff, *Unconventional Warfare*, I-9.

[18] Joint Chiefs of Staff, *Unconventional Warfare*, I-10.

[19] Joint Chiefs of Staff, *Unconventional Warfare*, 2-21.

Second, UW consists of seven doctrinal phases: preparation, initial contact, infiltration, organization, buildup, employment, transition.[20] Each Joint and Army UW publication presents these phases as a framework to guide the UW advisor on how to contact, organize, and employ the insurgents. UW advisors deploy in small elements that embed with insurgents. U.S. advisors must mitigate the state's knowledge of their presence and escalate the insurgents' activities in a manner that avoids a decisive reaction from the state. These phases provide a framework for how to advise the insurgency based on doctrinal principles.

Lastly, UW doctrine acknowledges the value of air support but focuses on the employment of conventional Air Force capabilities. All UW doctrine emphasizes the benefit of close air support (CAS), electronic warfare, mobility support, material support, and intelligence for UW. These capabilities assist in the development, protection, and employment of the insurgents as they face the stronger state adversary. The doctrine expects the U.S. Air Force or other third-party sponsors to provide these capabilities.

Aside from these common trends, ATP 3-5.1 provides the most comprehensive list of required conditions for successful UW. ATP 3-5.1 reviews circumstances that U.S. advisors should consider when they evaluate the feasibility of a UW effort. The ATP states that the insurgency must be open to cooperation with U.S. advisors and support objectives compatible with U.S. interests. Additionally, the insurgency must retain a capable leadership corps to provide U.S. advisors initial contact points, as well as an indigenous command and control (C2) node. Furthermore, the population needs to possess the will to resist the control of the governing power. Lastly, the insurgents must have access to a sufficient safe haven that offers security from the government or occupying power while the insurgency builds its strength. These conditions allow the United States to confirm the potential for a successful UW campaign.

In addition to these conditions, the United States must ensure that it exercises effective joint cooperation. JP 3-5.1 emphasizes that UW execution involves multiple

[20] Department of the Army, *Unconventional Warfare*, 2-8 to 2-16.

DOD services and civilian agencies. Thus, the JP emphasizes that the command structure from the strategic to the tactical levels needs to work in concert.[21] The United States may conduct UW in a multitude of environments and a high degree of political sensitivity usually accompanies this approach. A joint effort among all involved agencies is the best way to achieve a successful outcome.

3. Review of Insurgent Airpower

This study found two doctrinal publications and two academic articles that reference either an insurgent air capability or guerrilla tactics in the air domain, the first being JP 3-5.1. It states, "In certain cases, it may be appropriate for U.S. forces to help develop an aviation or maritime resistance force capability, including aspects of infrastructure."[22] Regardless of this acknowledgement, it neglects to discuss conditions that lead UW advisors to exercise this course of action. The remainder of the publication's discussion on airpower centers on the application of conventional air capabilities.

ATP 3-5.1 offers the most detail with regard to AFSOC's role during a UW effort, but still only mentions development of an insurgent air capability with a brief sentence. The ATP states that the air component to a UW effort is responsible for the "development of an aviation-focused underground, auxiliary, and guerrilla force," yet the ATP does not expound beyond this statement.[23] It provides an annex that dictates AFSOC's role in a UW campaign but this list only addresses C2, planning, joint aviation operations, information operations (IO), cyber warfare, electronic warfare, and non-standard recovery operations.[24] This annex does not mention an insurgent air capability or AFSOC advisory efforts beyond that abovementioned single quote.

---

[21] Department of the Army, *Unconventional Warfare*, IV-4.

[22] Joint Chiefs of Staff, *Unconventional Warfare*, III-24.

[23] Department of the Army, *Unconventional Warfare*, A-4.

[24] Department of the Army, *Unconventional Warfare*, A-4.

In addition to the doctrinal publications, *Seeking Shadows in the Sky: The Strategy of Air Guerrilla Warfare*, examines how a weak air force can adapt guerrilla tactics to the air domain when it confronts a stronger adversary.[25] In this work, Patricia Hoffman examines how the principles of guerrilla warfare can apply to the air domain. Hoffman concludes that a weak air force must achieve superior intelligence, security, a mobility advantage, surprise, and reliable sustainment when faced with a superior government's air force. However, Hoffman's work addresses weak government air forces, not insurgencies. Thus, Hoffman's findings may or may not prove useful in their application to insurgent air employment.

Lastly, Lt. Col John Bunnell catalogs resistance airpower in his 2011 Air War College piece: *From the Underground to the High Ground: The Insurgent Use of Airpower*. He uses four cases to derive conclusions about factors needed for insurgent airpower to operate effectively.[26] Lt. Col Bunnell examines each case and concludes that "external support, a sanctuary area, a somewhat permissive air environment, and a reasonably sophisticated command and control system" are essential factors for an insurgent air capability.[27] However, Bunnell does not examine the conditions of each conflict prior to the air capabilities' introduction. This leaves the reader to assume the development of insurgent airpower is possible at any phase of the insurgency. Also, Bunnell does not examine the cases doctrinally, either from a UW or USAF perspective. Instead, he applies his experience as a pilot to draw conclusions.

4. Review of Air Operations

This section will review the literature on USAF Doctrine through a UW lens. Overall, the study investigated foundational Air Force doctrine as well as doctrinal annexes that provide specific definitions for missions pertinent to this study. Air Force

---

[25] Patricia D. Hoffman, "Seeking Shadows in The Sky: The Strategy of Air Guerrilla Warfare," (master's thesis, Air University, 2015), v.

[26] John G. Bunnell. "From the Underground to the High Ground: The Insurgent Use of Airpower," (master's thesis, Air War College, 2011), 14.

[27] Bunnell, "From the Underground to the High Ground: The Insurgent Use of Airpower," 14.

doctrine addresses UW, but in a limited manner. Since literature specific to UW does not address the development or employment of an insurgent air capability, this study will merge the information from this section with the previously discussed UW information to develop this study's theorized conditions and imperatives.

The Air Force articulates its perception of its role in operations in *U.S. Air Force Doctrine Volume 1, Basic Doctrine*. The document leads with the declaration that "airpower is inherently a strategic force." It then describes how Airmen view the application of force from a functional perspective versus a geographic one, due to airpower's unmatched ability to traverse time and space. This leads Airmen to the conclusion that "control of the vertical dimension is generally a necessary precondition for control of the surface."[28] Therefore, Airmen view the Air Force as a strategic force whose dominance is an imperative for terrestrial operations, but does not face the same constraints as its sister services.

The most essential requirements to get a plane airborne include personnel, security, and bases. *Basic Doctrine* states, "Capabilities, people, weapons, bases, logistics, and all supporting infrastructure" compose the fundamental components that result in airpower.[29] These elements cost a great deal in terms of manpower and resources, and only through their effective integration can the Air Force accomplish its mission. *Basic Doctrine* also notes that force protection is a requirement to ensure that this integration can occur. It states that Air Force elements must maintain safety of the aircraft through physical security measures or the selection of base locations far from the enemy's reach.[30] This security from enemy intrusion, coupled with the basic requirements for airpower, enables the Air Force to operate.

In addition to these basic requirements, Air Force doctrine dictates the need to maintain aerial security during operations. *U.S. Air Force Annex 3-1 Counterair*

---

[28] Department of the Air Force, *Basic Doctrine*, Vol. 1 (Washington, DC: U.S. Air Force, 2016), http://www.doctrine.af.mil/Portals/61/documents/Volume_1/Volume-1-Basic-Doctrine.pdf?ver=2017-09-13-150324-650, 34.

[29] Department of the Air Force, *Basic Doctrine*, 35.

[30] Department of the Air Force, *Basic Doctrine*, 57.

Operations describes the need for air superiority, which "permits the conduct of its (air) operations at a given time and place without prohibitive interference from air and missile threats."[31] This adds the ability to operate in the aerial environment, which in conjunction with the basic requirements to develop airpower, allows the pilots to function in contested locations.

Furthermore, the tenets of airpower offer guidelines for airpower employment in *Basic Doctrine*. Included among them are command and control, prioritization of targets, and conservation of assets. When commanders employ airpower with these tenets in mind, the result will be synergistic effects, as airpower can produce a coordinated effort across multiple domains.[32] Commanders use these tenets as guidelines for airpower employment.

Moreover, the Air Force employs its assets across a wide array of missions. Annex 3-70, *Strategic Attack*, explains that the Air Force executes strategic attack missions to achieve strategic objectives through striking vital enemy centers of gravity.[33] Also, Annex 3-1, *Counterland Operations*, adds that close CAS and air interdiction (AI) missions target the enemy through air-to-ground attacks. However, CAS does so in close proximity to friendly forces, while AI strikes behind enemy lines to disrupt and destroy personnel and infrastructure.[34] Finally, Annex 3-3, *Global Integrated Intelligence, Surveillance & Reconnaissance Operations*, articulates that the Air Force conducts intelligence operations in support of an overall military campaign.[35] As the Air Force

---

[31] Department of the Air Force, *Counterair Operations*, Annex 3-01 (Washington, DC: U.S. Air Force, 2016), http://www.doctrine.af.mil/Portals/61/documents/Annex_3-01/3-01-ANNEX-COUNTERAIR.pdf?ver=2017-09-19-153800-487, 4.

[32] Department of the Air Force, *Basic Doctrine*, 67-75.

[33] Department of the Air Force, *Strategic Attack*, Annex 3-70 (Washington, DC: U.S. Air Force, 2017), http://www.doctrine.af.mil/Portals/61/documents/Annex_3-70/3-70-Annex-STRATEGIC-ATTACK.pdf?ver=2017-09-19-161550-053, 1.

[34] Department of the Air Force, *Counterland Operations*, Annex 3-03 (Washington, DC: U.S. Air Force, 2017), http://www.doctrine.af.mil/Doctrine-Annexes/Annex-3-03-Counterland-Ops, 8-9.

[35] Department of the Air Force, *Global Integrated Intelligence, Surveillance & Reconnaissance Operations*, Annex 3-03 (Washington, DC: U.S. Air Force, 2015), http://www.doctrine.af.mil/Doctrine-Annexes/Annex-2-0-Global-Integrated-ISR-Ops, 2.

conducts these missions, the air component commander should utilize the tenets of airpower to achieve maximum effectiveness in a joint environment.[36]

As a final note, *Air Force Doctrine Document (AFDD) 3-2, Irregular Warfare*, addresses UW but only reviews it briefly. The document recites the definition of UW from joint doctrine and claims that AFSOC should appropriately train and equip advisors who conduct operations such as FID or UW.[37] However, the doctrine does not explain how Air Force advisors should conduct these operations nor does it review the principles of UW. Therefore, aside from its citation of the definition of UW, AFDD 3-2 does not provide additional information with regard to UW or the Air Force's role in it.

5. Summary

Currently, the DOD has not published any specific doctrine or studies that sufficiently address the conditions needed to produce an insurgent air capability nor how to employ that capability. Conversely, the UW publications dictate the conditions needed for the concept's execution and Air Force doctrine conveys the requirements for airpower. This study will use principles from each to theorize the proper conditions for and employment of an insurgent air capability. These concepts will drive the imperatives for this study.

F. DEVELOPMENT OF CONDITIONS AND IMPERATIVES

Through the literature review, this study identified necessary conditions for insurgencies, UW campaigns, and Air Force operations, as well as employment practices. This study used insight with regard to all three areas to infer theorized conditions needed for successful development of an insurgent air capability and imperatives for its employment. The theorized conditions represent circumstances that the United States should identify as present before it considers development of an insurgent air capability. The theorized imperatives represent basic practices that U.S. advisors and insurgencies

[36]Department of the Air Force, *Basic Doctrine*, 65.

[37] Department of the Air Force, *Irregular Warfare*, AFDD 3-2 (Washington, DC: Department of the Air Force, 2013), 17.

should follow in the employment of an insurgent air capability. This section lists each theorized condition and imperative along with explanations as to how they correspond with both UW and Air Force principles. This study did not intentionally omit any conditions or imperatives but does not assume the following list is comprehensive.

(1) Theorized Conditions Needed for Insurgent Air Development

This study suggests that the United States should only develop an insurgent air capability when it assesses that the following conditions are present:

Condition 1. *At least a tactical-level requirement exists that the United States or insurgents cannot satisfy by means other than air. This capability must support the intent of the UW campaign and insurgency.*

As McCormick points out, an insurgency must maintain a discreet posture to thrive, and an insurgency's underdeveloped nature requires it to expend its resources very carefully. Per *Air Force Basic Doctrine*, an air capability is a resource-intensive endeavor. If a capability does not fulfill a specific purpose then the insurgency should not invest in that capability. Therefore, the insurgency should exhaust all other options before it considers the development of an air capability.

Condition 2. *UW advisors and the insurgents have access to safe havens, infrastructure, and equipment within or near conflict zones. If not, the advisors or insurgents can introduce these factors into the environment.*

As *Air Force Basic Doctrine* states, airpower requires terrestrial bases of operations. Though air assets can traverse time and space, they require specific equipment and infrastructure that tether them to geographic locations. Regarding UW doctrine, ATP 3-5.1 highlights the insurgency's need to maintain a safe haven as shelter from the state. To satisfy both needs, U.S. advisors and the insurgents must retain access to land, as well as maintenance and logistics resources that allow them to acquire and maintain the air capability. Additionally,

the United States must maintain access to locations that allow them to train, secure, and employ the air capability without fear of state detection.

Condition 3. *The population possesses individuals with aviation and maintenance experience.*

Air Force Basic Doctrine calls for the integration of people and capabilities. As airpower is technologically intensive, it requires an educated and mechanically inclined force. The insurgency should retain access to personnel technically capable of maintaining the chosen air capability. This will provide a higher potential for success and decrease the time needed to develop this knowledge.

Condition 4. *The insurgency possesses the excess capacity needed to produce, sustain, and integrate an insurgent air capability.*

Military doctrine notes that an insurgency utilizes a guerrilla force, auxiliary, and underground throughout its operations. This study assumes that an air capability will be a component of the overall insurgency, so the air effort will need to use the same auxiliary and underground support. Development of an insurgent air capability must not impede the progress of the ground insurgency. An insurgency may contain the essentials to build an air capability but if the expenditure of those resources compromises insurgent efforts on the ground, then the insurgency should not pursue the air capability.

Condition 5. *The enemy's air defense systems are vulnerable to the proposed insurgent air capability.*

U.S. Air Force Doctrine Annex 3-1, *Counterair Operations,* states that successful air operations require at least localized air superiority for success. The threat environment must show potential for the air capability to operate. If the enemy maintains efficient detection capabilities or strict regulation on the air domain, U.S. advisors and the insurgent force must see potential to degrade that control. If this is not possible, then the air capability will not have a chance to succeed and there will be no benefit from the expenditure of the insurgency's scarce resources used to develop an air capability.

(2) Theorized Imperatives for an Insurgent Air Capability

The imperatives that follow represent basic practices that U.S. advisors and insurgents should follow for the successful employment of an insurgent air capability.

Imperative 1. *The employment of the air capability cannot elicit a response from the state that the insurgency cannot endure.*

Initially to survive, an insurgency must remain invisible to the state for it to thrive without fear of state retribution. The employment of the insurgent air capability must not instigate a counteraction from the state that threatens the existence of the overall insurgent effort. This can include actions that increase the visibility of the insurgency to the state or provoke the state to mobilize the entirety of its resources to eliminate the insurgency.

Imperative 2. *An insurgent command must synchronize the efforts of the insurgent air and ground elements to produce optimal effects.*

Joint UW doctrine emphasizes the need for joint cooperation throughout all phases of UW. Consequently, the insurgent air capability and insurgent ground force, along with their U.S. advisors, cannot act as separate entities. Each needs to serve the same insurgent command so their actions nest under the same insurgent and UW campaign plan. Additionally, there is potential that each element will survive using the same underground and auxiliary support, so an insurgent command must manage how these components support the ground and air elements. Furthermore, Air Force doctrine requires the judicious use of the air capabilities in such a resource-constrained environment.

Table 1. Summary of Theorized Conditions and Imperatives for Insurgent Air Capability.

Conditions for Insurgent Air Development
Theorized Condition 1. At least a tactical-level requirement exists that the United States or insurgents cannot satisfy by means other than air. This capability must support the intent of the UW campaign and insurgency.
Theorized Condition 2. UW advisors and the insurgents have access to safe havens, infrastructure, and equipment within or near conflict zones. If not, the advisors or insurgents can introduce these factors into the environment.
Theorized Condition 3. The population possesses individuals with aviation and maintenance experience.
Theorized Condition 4. The insurgency possesses the excess capacity needed to produce, sustain, and integrate an insurgent air capability
Theorized Condition 5: The enemy's air defense systems are vulnerable to the proposed insurgent air capability.
Imperatives for Insurgent Air Employment
Theorized Imperative 1: The employment of the air capability cannot elicit a response from the state that the insurgency cannot endure**.**
Theorized Imperative 2: An insurgent command must synchronize the efforts of the insurgent air and ground elements to produce optimal effects.

G. METHODOLOGY

The methodology for this study uses two historic case studies to test the theorized conditions and imperatives: the U.S. support of Laotian Hmong Pilots in the 1960s and the Tamil Tiger air effort against the Sri Lankan government from 1995 through 2009. This study will explore which conditions led to the creation of these insurgent air capabilities and how each indigenous element employed them. Then, it will evaluate which of the theorized conditions and imperatives the cases fulfilled. The study will reconcile the results between the two cases to validate or revise the theorized conditions and imperatives. Additionally, the study will provide areas for future study.

Chapter II will examine the Laos case study. This study will use this case because it represents the only documented instance in which the United States created an air capability from a guerrilla force within a conflict area. Throughout the 1950s and 1960s,

Viet Minh Army (NVA) forces and a Laotian separatist group, the Pathet Lao, successfully captured control of the northeast provinces of Laos in order to overthrow the Laotian central government and install a communist-friendly regime. Resident in these seized territories were the Hmong, a vehemently anti-communist tribe who mobilized against the occupying Viet Minh forces through the use of guerrilla tactics. Although the Hmong maintained a loose affiliation with the Laotian government, their residence in NVA-held territory restricted the Laotian government's support to them. Consequently, the Hmong's situation resembled that of an insurgency. The United States viewed the Hmong as a valuable guerrilla element that could disrupt the NVA advance toward the Laotian capital. As a result, the United States committed material and advisory support to the Hmong, which led to the creation of special guerrilla units (SGUs), and a Hmong pilot corps. U.S. advisors selected, trained, and employed the Hmong pilots to conduct both combat and reconnaissance missions against the NVA.

Chapter III will assess the Tamil Tiger case as a second example of the development and employment of an insurgent air capability. In a conflict that spanned from 1976 to 2009, the Liberation Tigers of Tamil Eelam (LTTE) fought against the Sri Lankan government through all three phases of an insurgency, with successes and failures throughout that time.[38] Eventually, the LTTE created an insurgent air force capable of striking targets throughout the entire island. The United States never supported the Tamils because it designated them a terrorist organization in October 1997, so this case was not UW as defined in this study.[39] Nevertheless, the Tamils succeeded in the development and employment of an insurgent air capability. An assessment of the LTTE Air Tigers' creation and their employment will still provide qualitative data that this study can apply to test the theorized conditions and imperatives.

---

[38] M. R. Narayan Swamy, *Inside an Elusive Mind, Prabhakaran : The First Profile of the World's most Ruthless Guerrilla Leader* (Sri Lanka: Vijitha Yapa Publications), 2003, 66; Eelam is the Tamil word for the island of Sri Lanka.

[39] "Foreign Terrorist Organizations," U.S. Department of State, accessed 8/31/2017, https://www.state.gov/j/ct/rls/other/des/123085.htm.

Lastly, Chapter IV will compare the results of the two cases to validate and refine the theorized conditions and imperatives. Also, this chapter will include areas of future study based on the findings of the case evaluations and the limitations of the study.

H. LIMITATIONS TO THE STUDY

Limitation 1. Neither case study involves a strict UW scenario. Only the Laos case involves the United States' development of an indigenous air capability, but these tribal forces were still loosely affiliated with the Laotian government, yet fought against an occupying power. The Tamil Tigers case was an insurgency, but not a UW effort. They were one of the few insurgencies able to build its forces sufficiently to develop separate branches of military service. Although this may limit the comprehensiveness of the conclusions, there are no other historic examples of insurgent airpower employment during a UW effort.

Limitation 2. The guerrilla air assets within each case consist of manned aircraft, which limits the versatility of the conclusions in their application to other modalities of air support, such as unmanned aircraft. However, this study can provide general observations of insurgent airpower that future U.S. advisors can apply to the employment of more modern technology in future tests.

Limitation 3. This study does not address development of clandestine air networks prior to the start of a conflict. Clandestine network development prior to a conflict may serve a plethora of situations, both conventional and unconventional. Thus, this activity is not exclusive to a UW effort. Additionally, the Laotian and Tamil cases do not include instances of pre-conflict clandestine air network development. For these reasons, this study framed the research to the strict definition of UW within its doctrinal phases.

II. CASE STUDY: LAOS AND OPERATION WATERPUMP

Figure 1. Laos's Location within Southeast Asia[40]

A. INTRODUCTION

Throughout the 1960s, the United States supported the Hmong, a tribal guerrilla group, to resist occupying NVA forces within northern Laos. North Vietnam deployed forces into Laos in an attempt to overthrow the Laotian constitutional monarchy and facilitate the formation of a communist-friendly government. The Hmong offered the United States a surrogate force that could combat the NVA within occupied territory. During its support, the United States established a Hmong pilot corps to support the Hmong ground forces against the NVA. This chapter will review the development and employment of this Hmong air capability to evaluate this study's theorized conditions and imperatives for insurgent airpower.

40 William M. Leary, "CIA Air Operations in Laos, 1955-1974," CIA, last updated 6/27/2008, https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/winter99-00/art7.html.

B. THE SITUATION IN LAOS

During World War II, the Vichy French still controlled the nation of Laos in Southeast Asia, which bordered Thailand, North Vietnam, South Vietnam, China, and Cambodia.[41] The Laotian royal elite cooperated with French representatives to effectively govern the nation, but Laos still suffered from an underdeveloped economy and dilapidated road infrastructure.[42] Additionally, French representatives ensured that the Laotian royal elite received an education in Vietnam and Paris but they did not introduce a general education system within Laos.[43] The French controlled the Laotian capital, Vientiane, and the surrounding area throughout Laos's southern provinces, yet they could not govern the northern mountainous region.[44] The terrain restricted French forces and they struggled to control the northern population, which consisted mostly of Hmong tribesmen. The Hmong considered themselves independent from the government's control.[45] They revolted in the early 1920s against the French and Laos central government, but by the 1940s the groups reached an uneasy truce.[46] The French worked to keep Laos stable yet it was a poor nation that lacked a national identity.

When World War II ended, a civil war among members of the Laotian royal elite erupted, threatening this stability and highlighted the growth of North Vietnam's influence in the country. Laotian Prince Souphanouvong sought to take control of the Laotian royal family from the ruling royal elite.[47] France backed the incumbents and Souphanouvong recruited the support of North Vietnamese President Ho Chi Minh and

---

[41] John Stuart-Fox and Mary Kooyman, *Historical Dictionary of Laos* (New Jersey: The Scarecrow Press Inc., 1992), xxi.

[42] John Stuart-Fox, *Political History of the Lao State* (London: Frances Printer, 1986), 12.

[43] Stuart-Fox and Mary Kooyman. *Historical Dictionary of Laos*, 35.

[44] Victor B. Anthony and Richard R. Sexton, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973* (Washington, DC: Office of Air Force History, 1993), 4.

[45] Anthony and Sexton, *The United States Air Force in Southeast Asia, 1954-1973*, 5.

[46] Anthony and Sexton, *The United States Air Force in Southeast Asia, 1954-1973*, 5.

[47] Anthony and Sexton, *The United States Air Force in Southeast Asia, 1954-1973*, 7.

the NVA.[48] After a year of conflict, the French and Laotian Colonial Forces defeated Souphanouvong and the NVA, and exiled the prince to North Vietnam.[49] Following the conflict, a French–Laotian council established Laos as a constitutional monarchy in an attempt to prevent future civil war.[50]

In 1954, the NVA and Souphanouvong resumed their aggression in northeastern Laos, which precipitated French withdrawal from Southeast Asia. Souphanouvong reentered the northern provinces of Laos from the North Vietnamese border. With the help of NVA forces, he initiated a movement known as the Pathet Lao, which aimed to seize control of the government.[51] To counter the communist infiltration, France seized a fortress at Dien Bien Phu in Vietnam as a means to block passage into Laos. After eight weeks of intense combat, the NVA defeated the French at Dien Bien Phu. Although this was only a single battle, it exacerbated the French citizenry's tolerance of its involvement in the region, as France struggled to control both Laos and Vietnam.[52] In 1954, the French began initiatives to pull out of Southeast Asia. Subsequently, North Vietnam deployed NVA forces into Laos to aid Prince Souphanouvong and to expand communist influence into the country. Without French assistance, the NVA's increased presence threatened the Laotian constitutional monarchy.

C. BACKGROUND ON THE INSURGENCY

The events surrounding the NVA invasion of Laos sparked both the Hmong's efforts against the communists as well as the United States' involvement in the region. These events led to an eventual U.S.–Hmong partnership, which produced a Hmong pilot corps. This section will provide context on how the U.S. support to the Hmong began.

---

[48] Anthony and Sexton, *The United States Air Force in Southeast Asia, 1954-1973*, 8.

[49] Stuart-Fox, *Political History of the Lao State*, 19.

[50] Stuart-Fox, *Political History of the Lao State*, 18.

[51] James E. Parker, *Codename Mule: Fighting the Secret War in Laos for the CIA* (Annapolis, MD: Naval Institute Press, 1995), xxiii.

[52] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 11.

The Hmong resisted NVA occupation for the remainder of the 1950s.[53] Hmong guerrilla leader General Vang Pao and his tribal forces used guerrilla tactics against the NVA and Pathet Lao with little success.[54] Despite the tribe's aversion to French influence, Pao received a formal military education from the French during their occupation of Southeast Asia.[55] However, the tribe had no written language or access to a formal education.[56] Furthermore, they were an agricultural society that relied heavily on the opium trade, which did not generate enough profit to support a robust insurgent effort.[57] Although this study was not able to find details regarding the Hmong's combat strength during this period, it is evident that the tribe failed to halt the NVA's advance into Hmong territory.

Concurrently, the communists' deliberate seizure of northern Laotian territory worried the United States. It viewed Laos as key terrain in the effort to contain communism and stop its spread throughout Southeast Asia. Prior to the NVA invasion, Laos served as a cushion between China and pro-Western Siam, modern-day Thailand.[58] The United States speculated that if Laos fell to communist forces, Thailand might be vulnerable to attack. Subsequently, the United States explored military options to support the Laotian government.

To provide aid, the United States needed to overcome several factors that restricted deployment of overt U.S. military assistance to the Laotian government. U.S. intervention in South Vietnam already faced domestic criticism during the mid-1950s into the early-1960s. Any overt escalation of military activity in Laos posed substantial risk to exacerbate the American public's intolerance of U.S. involvement in Southeast

---

[53] Roger Warner, *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam* (New York: Simon and Schuster, 1995), 35.

[54] Thomas L. Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973* (Wahington, D.C.: Central Intelligence Agency, 2006), 4.

[55] Christopher Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos* (New York: Crown Publishing Inc, 1987), 94.

[56] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 44.

[57] Keith Quincy, *Hmong: History of the People*, 150.

[58] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 98.

Asia.[59] In addition, the Geneva Accords of 1954 and 1962 prohibited the permanent stationing of U.S. military personnel and equipment within Laotian territory.[60] Therefore, any U.S. involvement within the Laotian borders required discretion.

The United States opted to launch a covert advisory effort, which resulted in a Central Intelligence Agency (CIA)-led campaign that the DOD supported with funds and personnel.[61] This initiative, named Project 404, provided the American Embassy in Laos with covert advisors from the U.S. Army and Air Force.[62] They planned to build the Royal Laotian Armed Forces' (FAR) capacity to confront the invading NVA forces and defeat the Pathet Lao. The advisors hoped that the employment of these partner forces might mitigate the need to deploy conventional U.S. combat troops into the country.

The dilapidated status of the FAR presented a significant challenge for the U.S. advisors. In 1955, the Laotian Army contained fewer than 10,000 combat troops.[63] Also, a 10% literacy rate and lack of national identity among the Laotian people limited the U.S. advisors from the expeditious development of competent Laotian security forces.[64] As a result, the FAR possessed very little offensive capability to employ against the encroachment of NVA forces. Despite the investment of $34 million, the U.S. advisory effort proved unable to produce enough conventional FAR to counter the communists' buildup and advance into Laotian territories.[65] Thus, the FAR maintained a defensive posture around the capital region of Vientiane in an effort to preserve the Laotian government, with periodic operations into the occupied areas.

---

[59] Warner, *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam*, 70.

[60] James E. Parker, *Covert Ops: The CIAs Secret War in Laos (*New York: St. Martin's Paperback, 1997), 227.

[61] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973,* 23.

[62] Kenneth Conboy and James Morrison, *Shadow War: The CIA's Secret War in Laos* (Boulder, CO: Paladin Press, 1995), 159.

[63] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973,* 12.

[64] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973,* 12.

[65] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 300.

The stagnant development of the FAR allowed communist forces to thrive. Figure 2 is a map from a declassified report that shows the extent of communist occupation by 1962, with communist-controlled territory highlighted in red. The NVA–Pathet Lao alliance captured the northeast provinces of Phong Saly, Samneua, and parts of Xieng Kouang, which encompassed almost half the country.[66] Within this occupied area, communist forces massed and organized approximately 110,000 troops, including combat, support, engineers, armored, and military advisors.[67] This constituted a formal occupation by conventional forces that successfully seized and controlled Laotian territory.

Figure 2. Map of Communist Occupation from Redacted Report[68]

---

66 Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 23, 43, 31.

67 Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 139.

68 Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, xxiii.

In 1962, the Project 404 advisors' continued concern for Laos led them to seek the employment of forces other than the FAR to combat the NVA. Consequently, U.S. advisors recruited the Hmong tribe as a surrogate force. The tribe resided in the areas occupied by the NVA-Pathet Lao forces and shared the United States' anti-communist sentiment.[69] Moreover, the Hmong maintained a close camaraderie to the Vietnamese Montagnards, whom U.S. Special Forces and the CIA previously recruited as a partner force in Vietnam.[70] Although the tribe mustered only about 5,000 combatants when the United States began support, the Hmong population of 200,000 and their tribal hierarchy provided a natural structure on which to expand the guerrilla force.[71] Each village operated within a hierarchical system that acted as a local government and chain of command.[72] Vang Pao and his area command allowed the U.S. advisors to access the Hmong network and organize them into special guerrilla units (SGUs), which CIA personnel cultivated and logistically supported.[73] These forces provided the United States the ability to project power into communist-held territory, which had been difficult to achieve with FAR elements.

In this case, the United States supported an irregular force against an occupying power, which resembled a UW approach. Since the NVA and Pathet Lao forces greatly outnumbered the Hmong, U.S. advisors did not assess the overthrow of the occupiers as feasible at the time. Instead, the U.S.–Hmong strategy focused on disruption and deterrence to slow the enemy's advance toward the capital, Vientiane. They intended to convince the NVA forces that the cost in equipment and personnel was not worth the benefit of capturing Laos.[74]

---

[69] Warner, *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam*, 35.

[70] Robbins discusses this relationship but refers to these Vietnamese tribes as Maquisard forces, but John Erickson explains that the Maquisards consisted of Montagnards. Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 91-92. and John D. Erickson, "Translating the Untranslated: Djebar's Le blanc de l'Algerie,"*Research in African Literatures* 30, no. 3 (1999): 106.

[71] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 44.

[72] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 91-92.

[73] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 31.

[74] Ahern *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 83.

D. GENERAL INSURGENT AVIATION DEVELOPMENT

Project 404 included a program called Operation WATERPUMP, a covert initiative that employed air assets in support of friendly indigenous operations. This program first intended to provide covert U.S. air support along with training for the Royal Laotian Air Force (RLAF) personnel and planning expertise to the military leadership.[75] However, WATERPUMP struggled to meet all air support requirements and the NVA continued its progress toward the capital. Thus, advisors expanded the program to train and develop a Hmong pilot corps.[76] The United States intended to build a Hmong air capability that could provide combat and intelligence support to the Hmong guerrillas on the ground. This section will examine why WATERPUMP advisors decided to create a Hmong pilot corps and the conditions that made its development and employment feasible.

The Hmong's isolated location and weak force strength resulted in their inability to achieve significant progress against communist forces. The NVA–Pathet Lao forces possessed greater combat power in comparison to the meager numbers the Hmong could generate.[77] Additionally, frequent rain blocked ground lines of communication, which restricted the movement of any FAR forces that attempted to support the Hmong.[78] Even when the weather did not play a significant role, the FAR had limited capacity and could not deploy significant combat power beyond the capital region. To compensate, the United States attempted to provide both combat air and air intelligence support to increase the lethality and survivability of the Hmong guerrillas.

Initially, the United States attempted to use the RLAF and Laotian Army Air Force (LAAF) to fulfill these requirements, yet these forces were drastically underdeveloped. The French trained only six RLAF T-6 pilots in the 1940s, but the pilots

---

[75] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 97.

[76] Michael E. Haas, *Apollo's Warriors: United States Air Force Special Operations During the Cold War* (Maxwell AFB, AL: Air University Press, 1997), 175.

[77] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 300.

[78] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 300.

did not maintain their proficiency on the aircraft after the French departure.[79] Similarly, the LAAF constituted an air force in name only. Its entire inventory consisted of fixed-wing and rotary-wing transport assets, with no combat aircraft.[80] Despite U.S. efforts to assist and equip both units, neither could provide sufficient support to the Hmong.[81]

In response, the United States explored the possibility of air support from third-party sources, but this solution also proved insufficient. The U.S. and Thai Air Forces represented the two primary options, but they were too constrained or too ineffective. As mentioned previously, domestic and international political pressure restricted the United States from committing substantial direct U.S. Air Force resources. Still, the DOD and CIA deployed a small contingent of pilots that provided limited support.[82] The DOD established the WATERPUMP program and the CIA created Air America, an organization that operated under the guise of a commercial enterprise.[83] These elements did not adequately fulfill all the Hmong's support requirements. To augment these efforts, the United States extended the WATERPUMP program to include employment of Thai pilots, who conducted some of the missions considered too risky for U.S. pilots to execute.[84] Nonetheless, Thai pilots frequently hesitated to engage hostile targets during Hmong operations, which left the Hmong ground forces unsupported.[85]

As a result, the United States considered the development of a Hmong air capability. WATERPUMP advisors and General Vang Pao thought their language compatibility and familial ties to the ground forces could serve as valuable attributes to

---

[79] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 36.

[80] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 15.

[81] Victor Anthony's declassified report states the Laotian air forces' debilitated status was so bad that U.S. Pacific Air Force Command determined that the effort to develop their forces would be too costly.

[82] Hartman, "Airpower Support of Unconventional Warfare," 48.

[83] William M. Leary, "CIA air operations in Laos, 1955-1974,"*Journal of Military History* no. 53 (1995): 71.

[84] Hartman, "Airpower Support of Unconventional Warfare," 48.

[85] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 94.

produce a more efficient joint effort.[86] WATERPUMP advisors assessed this option as a way to potentially fulfill the substantial operational requirements that the U.S. pilots could not and maximize air-to-ground integration that Thai pilots did not achieve.

Other U.S. advisors and the Laotian government expressed concern about the Hmong pilot concept. The U.S. Army liaison to the Hmong leadership did not think that the tribe possessed the spare talent needed to successfully drive WATERPUMP's Hmong pilot program.[87] U.S. officials worried that the complexities of pilot training required Vang Pao to withdraw the most intelligent Hmong members from the battlefield for an air force that might only yield a "marginal addition" to the Hmong's operations.[88] Moreover, this program aroused the Laotian government's concerns. The Hmong were never formally beholden to the government, which made Laotian officials suspicious of Hmong allegiances. The thought of a rogue Hmong air attack on Vientiane instead of the NVA caused anxiety among the government leadership.[89] Thus, the Hmong pilot concept did not receive unanimous support.

Also, the Hmong were an extremely underdeveloped community.[90] They did not have access to a formal education, nor was there an indication that any Hmong members previously received aviation training. Their development as a force required a large investment in both time and finances to assess and train personnel to an acceptable level. Therefore, although the Hmong represented an accessible partner element, the personnel available offered no experience that WATERPUMP could build on.

Despite these limitations, U.S. advisors saw potential in the Hmong pilot program for several reasons, the first being access to an adequate safe haven and equipment. The United States already trained RLAF and LAAF pilots on the T-6, T-28, and T-2 aircraft in Udorn, Thailand. The U.S. government did not intend the Hmong pilot corps to exist

---

[86] Warner, *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam*, 166.

[87] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 298.

[88] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 298.

[89] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 298.

[90] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 44.

after U.S. support ended, so the development of the pilots and their use of U.S. aircraft still met the program's intent.[91] This arrangement meant U.S. advisors did not need to build permanent Hmong maintenance and logistics nodes to sustain the aircraft. The United States' ability to rededicate assets already in the region cut down on equipping costs, and Udorn acted as an external safe haven for the Hmong to train and receive necessary maintenance for their assigned aircraft.

Second, infrastructure within Laos afforded the Hmong pilots staging areas for operations. The Hmong established their operations centered in the city of Long Tieng, the second-largest city in Laos after Vientiane, which meant its economy could support many of the Hmong forces' logistical needs.[92] Also, the absence of improved roads and restrictive terrain around the city allowed the Hmong to keep control of it despite its close proximity to communist territory.[93] An airfield located within the city allowed both the Hmong Pilots and WATERPUMP advisors to access the Hmong leadership.

In addition, four primary airfields distributed throughout the country could serve as staging areas for extended operations.[94] The airfields' conditions were among the worst in the region. Several of the primary airfields in Laos had dirt runways, which restricted their use to periods of dry weather, and U.S. advisors considered the airfields too short for the piston-driven engines in the aircraft that the Hmong pilots operated.[95] Nevertheless, the airfields had some infrastructure that WATERPUMP could use, even if only in a limited way. Also, WATERPUMP created smaller airstrips throughout the country labeled "Lima Sites" that provided the pilots with supplemental options for staging areas.[96]

---

[91] Warner, *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam*, 178.

[92] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 36.

[93] Parker, *Covert Ops: The CIAs Secret War in Laos*, 35.

[94] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 16.

[95] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 16.

[96] Haas, *Apollo's Warriors: United States Air Force Special Operations during the Cold War*, 169.

Third, the NVA could not control the entire airspace over the occupied territory. The NVA deployed no organic aircraft nor any radar equipment into Laos.[97] They relied heavily on antiaircraft guns (mostly 37-mm and 12.7-mm) deployed from fixed positions to control the airspace over the occupied territory.[98] Therefore, the NVA possessed a surface-to-air threat in Laos, but these assets did not offer a capability beyond line-of-sight detection and engagement. Although these assets posed some risk to aircraft, the NVA could not control the entire airspace. Consequently, the potential existed for inexperienced guerrilla pilots who possessed enough knowledge of the region to conduct air operations and avoid high-threat areas when necessary.[99]

Lastly, General Vang Pao played a significant role in influencing the creation of the Hmong pilot corps. The Hmong SGUs' success against the NVA afforded Vang Pao significant sway amongst his Project 404 advisors. He viewed air support as critical but he became dissatisfied with the amount the United States could provide and the reliability of the Thai pilots. Vang Pao's conclusion led him to request his own pilot corps. As previously stated, he felt that tribal ties might encourage Hmong pilots to engage dangerous targets against which Thai pilots were too cautious.[100] U.S. advisors agreed with his observations and decided to initiate the development of the Hmong pilot corps.

In 1966 with the larger war in Vietnam escalating, U.S. advisors initiated testing for different aircraft for the Hmong pilots to use.[101] Aircraft tests started with Cessna 180s and evolved over a two-year period.[102] Eventually advisors identified the T-28 as the best platform for the Hmong pilots. Following this decision, WATERPUMP advisors

---

[97] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 179.

[98] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 182. and Ahern, "Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973," 257.

[99] Parker, *Covert Ops: The CIAs Secret War in Laos*, 82.

[100] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 65.

[101] Kenneth Conboy and James Morrison, *Shadow War: The CIA's Secret War in Laos* (Boulder, CO: 1995), 170.

[102] Conboy, *Shadow War: the CIA's Secret War in Laos*, 170.

produced the first class of pilots, which consisted of only two students.[103] However, this milestone officially established the Hmong pilot program.

Despite this long testing phase, advisors streamlined the Hmong's pilot training to a 6-month cycle, which allowed for the training and employment of 19 Hmong pilots.[104] The curriculum included formation flying, night operations, instruments, navigation, and gunnery.[105] WATERPUMP advisors only oriented the pilots to these concepts, which limited the initial skill level of each pilot at the completion of training. Nevertheless, program director at the time, Lt. Col. Heinie Aderholt, assessed that they performed better than the South Vietnamese pilots he previously had observed.[106] Also, these pilots maintained a vested interest in their support to the Hmong and explicitly proclaimed that they existed to "fly until they died."[107] Neither the U.S., Thai, nor Laotian government forces matched this dedication.

E. GENERAL INSURGENT AVIATION EMPLOYMENT

Once the Hmong pilots completed their training, WATERPUMP advisors and General Vang Pao employed the Hmong pilots in several ways. This section will review the missions that the Hmong pilots conducted, as well as how WATERPUMP advisors and General Vang Pao managed them. It will also discuss the effects that the insurgent air capability had on the battlefield.

The Hmong SGUs' military activity focused on guerrilla operations prior to WATERPUMP's introduction of the Hmong pilots. U.S. advisors assisted the development of the Hmong into an organized armed force, but the Hmong still primarily maintained a defensive posture.[108] They could launch short-duration guerrilla missions,

---

[103] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 298.

[104] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 65.

[105] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 76.

[106] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 298.

[107] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 65.

[108] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 82.

which U.S. advisors labeled as "spoiling operations" against weak NVA positions.[109] However, they could not hold territory beyond their established safe havens. At times, the Hmong conducted operations in conjunction with FAR to "bolster" the government's efforts.[110] However, the tribe alone only had the capacity of a guerilla force. The Hmong possessed some capacity for offensive operations, but could not seize land from the NVA and hold it.

Once employed, the Hmong pilots' knowledge of the area allowed them to conduct aggressive air strikes against communist targets with limited intelligence support. Usually, FAR commanders and local CIA representatives used the agency's intelligence to provide targets to the U.S. and Thai pilots for deliberate air strikes.[111] The Hmong pilots used this process, but their familiarity with the terrain and enemy disposition also allowed them to conduct operations against NVA defensive positions without depending on intelligence from external organizations.[112] U.S. advisors enthusiastically noted the Hmong pilots' willingness to fly low against high-risk enemy positions that even U.S. pilots hesitated to engage.[113] They also possessed the ability to acquire and engage these targets without the aid of ground controllers.[114] At times, Vang Pao and his CIA advisors discussed these strikes prior to their execution; at other times the pilots acquired the targets during routine sorties.[115] Often, the Hmong pilots successfully destroyed their targets, yet no sources provide specifics on the extent of the disruptive effects these attacks inflicted on the NVA.

Aside from point strikes, the Hmong pilots also supported the SGUs during their engagements with communist forces. This assistance consisted of air support to SGU

---

109 Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 355.

110 Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 300.

111 Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 65, 192.

112 Warner, *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam*, 267.

113 Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 66.

114 Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 326.

115 Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 39.

defensive positions that communist forces attacked.[116] Other times, Hmong pilots aided the SGUs if the NVA overwhelmed them during harassment operations. This support illustrated the Hmong pilots' value to the SGUs, which elevated them to a status of reverence within the Hmong community.[117] Thus, coordination between the air and ground units existed but the Hmong's operations remained mostly defensive in nature.

Furthermore, the Hmong pilots maintained a high frequency of operations, which yielded several benefits. Some Hmong pilots flew over 100 combat missions in one week, equivalent to the requirement for a USAF pilot during a one-year tour.[118] Their high operational tempo allowed the Hmong pilots to notice the smallest change in the terrain or the enemy's dispositions, which Christopher Robbins noted in his book, *The Ravens*, provided "the best intelligence in the area."[119] Lastly, this high operational tempo reduced the requirement of USAF pilots in Laos, something the United States desired.

However, the maintenance systems struggled to keep the aircraft operational. Many times, enemy fire rendered the T-28s non-mission capable. The U.S. logistics support did not prove adequate to repair the aircraft in a timely fashion, which degraded the WATERPUMP pilots' ability to operate.[120] The Embassy denied WATERPUMP advisors additional support, yet the Hmong pilots maintained their high volume of operations. At times, these deficiencies in the sustainment constrained WATERPUMP from fulfilling all support requirements and left many aircraft inoperable.

In 1969, NVA victories provoked the Hmong to escalate from guerrilla tactics to massed offensives. Communist forces seized the village of Muong Soui (see Figure 3), which provided them an advantageous staging area to assault Vientiane.[121] This event

---

[116] Haas, *Apollo's Warriors: United States Air Force Special Operations during the Cold War*, 184.

[117] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 180.

[118] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 299.

[119] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 64.

[120] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 53.

[121] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 317.

placed the Hmong in Long Tieng as the sole forces between the communists and the capital. At this point, U.S. advisors viewed the Hmong as the only force able to counter an NVA advance. As a result, the U.S. advisors persuaded General Vang Pao to mass his forces.[122] This change in strategy adjusted the focus of air employment from improvised guerrilla support to deliberate joint operations.

Figure 3. Map Showing Long Tieng and Muong Soui to the Northeast of Vientiane.[123]

The Hmong's new operations included two consecutive major offensives, the first being Operation OFF BALANCE, which focused on retaking Muong Soui from NVA forces. U.S. advisors considered joint synchronization as the key to OFF BALANCE's success. Vang Pao employed eight Hmong pilots against communist defenses to enable the Hmong ground forces' approach to the village.[124] Although the Hmong pilots suppressed the NVA defenses, the guerrilla assault faltered as they entered the village.

---

[122] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 318.

[123] "Thailand Memories," accessed September 10, 2017, http://www.bobandeva.com/mil/Thailand_Memories.htm.

[124] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 173.

First, a majority of the ground units became stagnant despite effective air cover, which left the remaining assault force vulnerable as they entered the village.[125] Second, sudden unfavorable weather restricted the aircraft from flying continuous support.[126] Lastly, once friendly forces entered the village, the potential of fratricide required precise air-to-ground integration, which the T-28 and guerrillas failed to establish. Eventually, communist forces captured the Hmong pilots' airstrip, which made it impossible for them to sustain air operations.[127] This enabled the NVA to stop the Hmong's momentum and force their withdrawal to Long Tieng.

Despite this defeat, U.S. advisors encouraged Vang Pao to launch a second offensive, Operation ABOUT FACE, into the communist-occupied Plain of Jars (see Figure 3).[128] Communist forces still threatened Vientiane and U.S. advisors wanted to prevent any further enemy advance. A demoralized Vang Pao hesitated to agree but approved the operation after WATERPUMP advisors reassured him of the T-28s' availability.[129] Also, this operation focused on Pathet Lao targets and avoided predominately NVA-controlled areas. Thus, the Hmong faced a less-organized enemy.

ABOUT FACE demonstrated the Hmong's first effective major joint operation. Hmong T-28 bombing raids preceded each ground force assault onto small targets throughout the enemy-controlled Plain of Jars.[130] The Hmong's progress became incremental and deliberate, as opposed to their attempt to seize a single, complex objective during OFF BALANCE. This technique facilitated the Hmong's advance further into the Xieng Khouang Province, which the enemy had controlled since 1962. WATERPUMP advisors proclaimed this integration of air and maneuver elements the

---

[125] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 173.

[126] Anthony, *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954-1973*, 306.

[127] Warner, *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam*, 267.

[128] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 321.

[129] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 187.

[130] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 191.

"winning formula," something the Hmong failed to achieve during past operations.[131] Over a two-month period, the Hmong liberated most of the province, which included about 10,000 Laotian civilians that the communist forces previously coerced for logistics support.[132] U.S. advisors considered the two-month-long operation an unexpected success.

Still, the Hmong's success did not last. The Hmong forces did not possess the capability to hold the seized territory. Following ABOUT FACE, the Hmong had only 5,000 guerrillas to defend the newly captured territory. The NVA eventually deployed 12,000 forces to retake the province.[133] The Hmong T-28s and other WATERPUMP pilots provided support but the SGUs still lacked the ability to hold the sizable province. Over the next two months, the Viet Minh recaptured all territory previously lost to the Hmong, which forced Vang Pao to retreat to Long Tieng.[134]

After ABOUT FACE, several aspects of the Laos campaign changed, which facilitated the end of the conflict. The NVA's success made U.S. National Security Advisor Henry Kissinger doubt the overall U.S. strategy in Laos. Accordingly, the United States dedicated B-52 bombers and USAF aircraft to the Laos effort.[135] By the beginning of 1970, the USAF conducted over 300 sorties a day inside Laos, which surpassed air operations in Vietnam at the time.[136] Also, by 1972 Hmong guerrillas and their pilot corps had incurred heavy losses, losing 16 of the 19 aviators. U.S. advisors began to question whether the Hmong could develop beyond a guerrilla force.[137] WATERPUMP was dissolved in 1972 as the United States increased its reliance on conventional air to halt the NVA's advance into Vientiane. On April 5, 1973, communist forces entered

---

[131] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 191.

[132] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973.* 331.

[133] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973,* 331.

[134] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 334.

[135] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 228.

[136] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 195-196.

[137] Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos*, 215.

Vientiane and forced Laotian President Souvanna Phouma to agree to the formation of the Provisional Government of National Union.[138] Although the NVA advertised this new government as a combined body between the Pathet Lao and Phouma's administration, CIA officials noted that the communists seized all the principal positions. Consequently, Vang Pao resigned as guerrilla commander and led thousands of Hmong into Thailand as refugees.

F. THEORIZED AIR UW CONDITIONS AND IMPERATIVES ANALYSIS

This section will examine which theorized conditions and imperatives apply to the Laos case study.

(1) Theorized Condition 1. At least a tactical-level requirement exists that the United States or insurgents cannot satisfy by means other than air. This capability must support the intent of the UW campaign and insurgency.

This study assesses this condition as fulfilled during the Laos case study. The need for close air support and air interdiction missions contributed to the decision to develop the Hmong pilots. Project WATERPUMP developed a Hmong pilot corps to help support a guerrilla force that could not generate enough strength to counter the occupying NVA forces. U.S. advisors attempted to employ alternative sources of air support but these methods proved ineffective. The United States did not provide enough air support due to both domestic and international pressure against involvement in Laos. The Laotian and Thai air forces were unreliable. The Hmong pilots served as a helpful addition to the U.S. pilots' support and compensated for ineffective support from third parties.

Also, the intent of the air capability matched the intent of the UW campaign. U.S. policy makers intended Project 404 to disrupt and coerce NVA forces for a limited duration. The U.S. advisors did not intend for the Hmong SGUs to remain as a permanent force, but only a temporary one to combat the NVA for the duration of the conflict.

[138] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961-1973*, 504.

Similarly, they did not intend for the Hmong pilots to act as a long-term or decisive capability. WATERPUMP advisors needed a short-term capability that allowed Hmong SGUs to counter the communist forces. Thus, the purpose of the Hmong pilot corps fit the profile of the UW effort.

(2) Theorized Condition 2. UW advisors and the insurgents have access to safe havens, infrastructure, and equipment within or near conflict zones. If not, the advisors or insurgents can introduce these factors into the environment.

The Hmong and U.S. advisors fulfilled this condition prior to the development of the Hmong pilots. The presence of aircraft and infrastructure in the region allowed WATERPUMP to equip the Hmong pilots with suitable aircraft. The United States' ability to transfer T-28, T-6, and T-2 aircraft to Thailand enabled WATERPUMP to equip the Hmong pilots. DOD, CIA, Thai, and Laotian pilots already flew these aircraft within Laos, which demonstrated the aircraft's suitability for the environment prior to the Hmong pilot program.

Additionally, the Hmong had access to two safe havens, one in Udorn and one in Long Tieng. The external safe haven of Udorn offered the Hmong a location to receive U.S. training, as well as U.S. maintenance and logistics services. The internal safe haven of Long Tieng provided a staging area for planning and operations. Lastly, airfields throughout the country provided staging points for forward operations when necessary. These locations maintained air superiority for the Hmong, which allowed them to secure their aircraft, receive support, maintain training proficiency, and initiate operations.

(3) Theorized Condition 3. The population possesses individuals with aviation and maintenance experience.

The Hmong population did not fulfill this condition prior to the development of the capability. The Hmong represented an uneducated tribe that had no prior experience with contemporary aviation technology. Yet, they developed into an effective force that met the needs of the SGUs. The absence of this condition did not restrict the program's success. Nevertheless, Thomas Ahern highlights in a declassified report that testing and development of the Hmong pilot program lasted two years. He cites the Hmong's lack of

education as a key contributing factor to the lengthy process.[139] In contrast, Christopher Robbins, in his book *The Ravens*, writes that the training cycle for the Hmong pilots lasted only six months. Therefore, it seems that the education barrier only hindered the initial development of the program. If Robbins's statement is accurate, then once WATERPUMP advisors developed the curriculum and became familiar with the Hmong, they were able to mitigate the tribe's education limitations.

(4) Theorized Condition 4. The insurgency possesses the excess capacity needed to produce an insurgent air capability.

The Laos case fulfilled this condition but it is unclear if U.S. advisors shared a consensus regarding the Hmong's capacity prior to the development of the Hmong pilot program. WATERPUMP advisors and Vang Pao assessed that the Hmong could spare individuals to enter pilot training. Conversely, the Hmong's Army advisors in the U.S. embassy objected. The Hmong could spare a few guerrillas, but Army advisors worried pilot training would require the most intelligent guerrillas. Considering the Hmong lacked education, Army advisors assessed the population of competent Hmong as limited. Accordingly, they worried that the removal of these individuals might hinder the effectiveness of the SGUs in return for a capability they thought showed only marginal potential. Thus, the advisors did not come to a consensus in their assessment. This study could not determine how Project 404 leadership reconciled the conflicting opinions, but despite the Army's nonconcurrence, the program continued.

Ultimately, the Hmong air capability did not stress the tribe's personnel and sustainment capacity. WATERPUMP only required the Hmong to provide guerrillas to develop the Hmong pilot force. The Hmong remained reliant on U.S. logistics and maintenance support, yet WATERPUMP was still able to provide a temporary air capability as intended. Advisors did not want an enduring Hmong capability so the Hmong's inability to sustain the aircraft beyond U.S. support was an acceptable limitation. Advisors only desired an air capability that could provide the necessary

[139] Ahern, *Undercover Armies: CIA and Surrogate Warfare in Laos*, 1961-1973, 298.

support to the SGUs throughout the NVA's occupation of Laotian territory. The Hmong pilots accomplished this task through both their tenacity and cultural ties. The pilots' access to Udorn allowed them to receive U.S. maintenance and logistics support without a need for their own underground or auxiliary networks to shoulder this burden.

(5) Theorized Condition 5. The enemy's air defense systems are vulnerable to the proposed insurgent air capability.

The NVA's air defense systems presented weaknesses prior to the program to train Hmong pilots. Antiaircraft weapons enabled the NVA to have a limited affect within the airspace. The NVA possessed no air-to-air and minimal detection capabilities, so they were able to regulate the air domain in only a limited fashion. These conditions allowed inexperienced Hmong pilots to gain the air superiority needed to succeed throughout the occupied area. Although the pilots experienced a high fatality rate, this study assesses their high operational tempo placed the pilots at increased risk. Ultimately, WATERPUMP advisors were aware of the NVA's air defense systems prior to the Hmong pilots' development and knew the T-28s could operate in that environment. Once employed, Hmong pilots were able to operate within Laos's airspace, which validates this imperative.

(6) Theorized Imperative 1. The employment of the air capability cannot elicit a response from the state that the insurgency cannot endure.

The development and employment of the Hmong pilots did not provide the NVA with any additional awareness of the Hmong's presence nor did it provoke an increased response from the communist forces. Hmong pilot training started four years after the tribe initiated guerrilla operations against the NVA. Therefore, the NVA already recognized the tribe as an active enemy. Also, the Hmong already established safe havens that were known to the NVA but inaccessible to communist forces. Udorn and Long Tieng allowed for storage and employment of the aircraft and did not afford the communists information in regards to the Hmong's presence or intent that they did not already know.

Of note, the Hmong pilots may have deterred any decisive action from the communists against the tribe. Ahern provides a quote from a declassified U.S. source that stated the NVA hesitated to mass against the Hmong because the NVA thought the tribe might inflict too much damage on the communist forces. U.S. advisors made this observation shortly after the introduction of the Hmong pilots. They did not directly identify the Hmong pilots as the reason for the NVA's hesitation, but the introduction of the Hmong pilots correlated with the U.S. advisors' observation in regards to the NVA's timid demeanor toward the Hmong. Thus, the Hmong pilots may have increased the tribe's ability to deter NVA assaults.

(7) Theorized Imperative 2. An insurgent command must synchronize the efforts of the insurgent air and ground elements to produce optimal effects.

WATERPUMP advisors and Hmong leadership partially followed this imperative. WATERPUMP and Vang Pao conducted periodic meetings and discussed the Hmong pilots' employment. Other times, the Hmong pilots improvised their operations in reaction to the needs of the SGUs or if they identified a target of opportunity. Additionally, the Hmong pilots' mentality of "fly until you die" drove them to conduct a high frequency of operations. It is unclear if Vang Pao and WATERPUMP approved all sorties and targets but various sources made it seem like the pilots maintained a degree of autonomy. This autonomy allowed the Hmong to degrade communist forces, but it might have undermined Vang Pao and WATERPUMP advisors' management of them.

Additionally, the Hmong pilots' high operational tempo exacerbated WATERPUMP's limited maintenance systems. The Hmong pilots attempted to satisfy all support requirements as they viewed the SGUs' success as reliant on air support. Several sources note instances where Hmong aircraft frequently incurred damage during operations. Concurrently, sources explain that WATERPUMP advisors struggled to keep aircraft operational due to the embassy's reluctance to provide the program with more maintenance support. This lack of support left many aircraft inoperable. Although sources do not directly attribute the stress on the maintenance systems to the Hmong's operational tempo, the correlation exists. This points to a miscalculation among

WATERPUMP advisors and Hmong leadership in the employment of the Hmong beyond their available resources. This violates the balance and priority tenets of airpower.

Lastly, the Hmong initially struggled with air-to-ground integration during their offensives but they ultimately attained effective joint operations. During Operation OFF BALANCE, the Hmong employed airpower appropriately, but the ground guerrilla forces did not exploit the Hmong pilots' effects. It is unclear why the ground elements did not advance, yet Muong Soui presented a complex objective occupied by a capable NVA force. Some accounts imply that Muong Soui's complexity disconcerted the ground units. However, Operation ABOUT FACE included a series of smaller objectives and a weaker adversary, the Pathet Lao. The Hmong pilots operated in the same manner, yet the SGUs reacted to the air support in a more favorable way than OFF BALANCE. This study assesses that the different nature of the objectives during ABOUT FACE contributed to the operation's success, not a change in the air employment.

III. CASE STUDY: THE TAMIL TIGERS

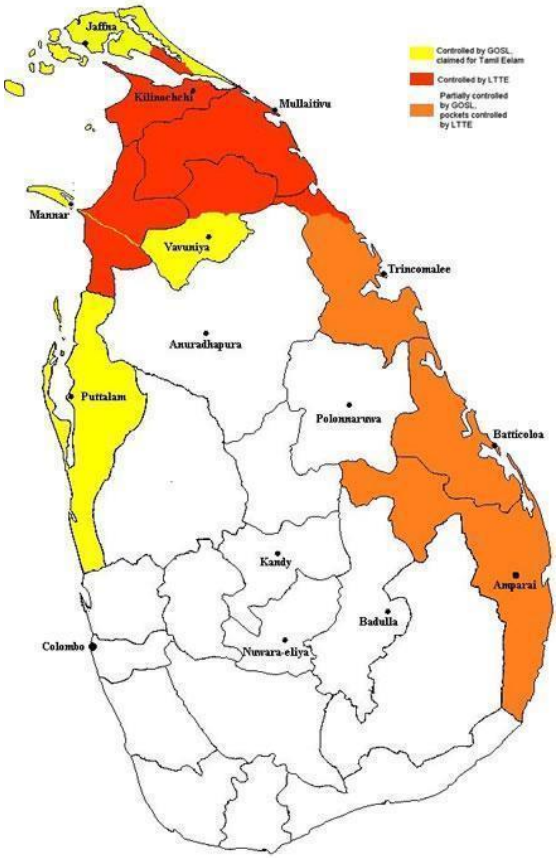

Figure 4. Extent of LTTE Territorial Control in Sri Lanka.[140]

A. INTRODUCTION

The Liberation Tigers of Tamil Eelam (LTTE) fought an insurgency in Sri Lanka that sought a homeland for the ethnic Tamils, whose traditional homes lay in the north and east of the island nation. They fought against government forces composed of the majority Sinhalese for over 30 years and suffered total defeat in 2009. Though not a UW case because the United States was not involved, the LTTE developed an insurgent air capability during their campaign. Consequently, this case can still provide valuable insight into the

140 "Extent of Territorial Control in Sri Lanka," Association of Tamils of Sri Lanka in the USA, accessed 8/28/, 2017, http://www.sangam.org/taraki/congress/05-07_Areas_of_Control.php.

necessary conditions for developing and employing an insurgent air capability. This chapter will review this case to evaluate the validity of the theorized conditions and imperatives for UW airpower.

B. THE SITUATION IN SRI LANKA

Sri Lanka, an island nation located off the southeast coast of India, spans 25,330 square miles, about the size of West Virginia.[141] Its terrain ranges from hilly and mountainous in the central highlands and the south, to jungle and scrub in the north.[142] Its economy in the mid-to-late 20th century consisted of fishing, tea exports, and tourism, as well as smuggling goods to India due to restrictive Indian laws that barred imports.[143] Formerly part of the British Empire when it was known as Ceylon, its location made it strategic for the defense of India's eastern flank.

The people who inhabited the island comprised two main ethnic groups, the majority Sinhalese and the minority Tamils. They spoke different languages, Sinhala and Tamil, and practiced different religions, Buddhism and Hinduism. Both groups lived on the island for thousands of years and maintained a peaceful relationship during most of that time.[144] However, the experience of British colonization interrupted their history of coexistence.

When Britain declared Sri Lanka part of the British Empire in 1802, they imposed their traditional method of colonial administration. Britain built roads and infrastructure, but also exercised the concept of divide and rule, where they elevated one group over another to administrate a territory. The Tamils became the beneficiaries of this strategy, as the British brought groups of them from Tamil Nadu in India to work the tea plantations.[145] This

---

141 *Encyclopedia Brittanica*, "Sri Lanka," accessed 9/9/2017, https://www.britannica.com/place/Sri-Lanka.

142 Paul L. Moorcraft, *Total Destruction of the Tamil Tigers (*Barnsley, UK: Pen & Sword Military, 2013), 128-129.

143 M.R. Narayan Swamy. *Inside an Elusive Mind, Prabhakaran: The First Profile of the World's most Ruthless Guerrilla Leader* (Sri Lanka: Vijitha Yapa Publications, 2003), 21.

144 Moorcraft, *Total Destruction of the Tamil Tigers,* 3.

145 Asoka Bandarage, *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy.* Routledge Contemporary South Asia Series; 15 (New York: Routledge, 2009), 30-31.

relationship allowed the Tamils to learn the English language and gain British favor over the Sinhalese, causing jealousy among the majority Sinhalese. The Tamil affiliation with the British gave them access to coveted administration work.[146] When the British granted Sri Lanka independence in 1948, it left a degree of stability in the nation. However, the absence of British influence released the growing ethnic tension.

C. BACKGROUND ON THE INSURGENCY

Discriminatory policies, violence against the Tamils, and poor Tamil political leadership all contributed to the formation of radical groups, including the LTTE. Understanding these conditions will provide insight into how the LTTE evolved into an insurgent movement capable of developing its own insurgent air capability.

Several conditions created grievances that led to the formation of radical groups, with discriminatory policy being the first condition. After independence from Great Britain in 1948, the Sinhalese majority took control of the government. They passed divisive and oppressive laws based on race, which set the conditions for an insurgency. First, they passed the Ceylon Citizenship Act in 1948, which disenfranchised Tamil citizens.[147] Second, the majority Sinhalese enacted the Sinhala Only Act in 1956, which made Sinhala the official language of the government. This policy disqualified the Tamils from public service since most of them did not speak Sinhalese.[148] Lastly, they confirmed a series of constitutions in 1972 and 1978, which privileged Buddhism over all other religions and classified the largely Hindu Tamil community as second-class citizens.[149] The 1978 constitution granted ethnic equality but still gave preference to Buddhism over other religions, which further inflamed tensions.[150] This oppressive legal environment set the stage for violence.

---

[146] Moorcraft, *Total Destruction of the Tamil Tigers,* 4-5.

[147] Amita Shastri, "Estate Tamils, the Ceylon Citizenship Act of 1948 and Sri Lankan Politics,"*Contemporary South Asia* vol 8, no. 1 (March 1, 1999), 65.

[148] Gordon Weiss, *The Cage* (London: Random House, 2011), 36.

[149] Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 64; Moorcraft, *Total Destruction of Tamils,* 10.

[150] Swamy, *Inside an Elusive Mind,* 92.

Additionally, Sinhalese politicians ignored violence against the Tamils and in some cases encouraged it. In particular, the government organized "hoodlums" to attack the Tamils after the Sinhala Only Act passed, though it eventually intervened to halt the killings.[151] Then in 1956, Prime Minister Solomon Bandaranaike came to power on a Sinhalese nationalist platform. Bandaranaike's platform restricted his political mobility to address the Tamil grievances. As a result, he backed out of a political pact that intended to establish Tamil government councils, which sowed additional mistrust.[152] Furthermore, Sinhalese civilians rioted in 1958, causing the first island-wide massacres of Tamils.[153] These hostile government policies combined with the widespread riots fostered resentment within the Tamil population.

Lastly, poor political leadership by partisan Tamil organizations also contributed to the emergence of an insurgency. The Illankai Tamil Arasu Kachchi party, founded on the policy to create a separate Tamil state, missed an opportunity to argue for Tamil rights. They did not respond with enough force to the Sinhalese violence. Instead, the group employed passive demonstrations that yielded poor results, which frustrated the Tamil community.[154] Other groups such as the All Ceylon Tamil Congress tried to work within the parliamentary system for parity within Sri Lanka.[155] Neither group stopped the aforementioned legislative acts that deprived the Tamils of civil rights within Sri Lanka. This failure exacerbated grievances within the Tamil community.

These serious grievances facilitated the formation of radical groups, which led to Velupillai Prabhakaran's emergence as an influential insurgent leader. Prabhakaran started individual acts of violence throughout his hometown of Jaffna, the largest Tamil city, to bolster his credibility within radical circles. These acts led to his appointment as military

---

151 C.A. Chandraprema, *Gōta's War: The Crushing of Tamil Tiger Terrorism in Sri Lanka* (Colombo: Ranjan Wijeratne Foundation, 2012), 31-32.

152 Joanne Richards, *An Institutional History of the Liberation Tigers of Tamil Eelam (LTTE)* (Geneva: The Graduate Institute, November, 2014), 11.

153 Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy*, 50.

154 A. Jeyaratnam Wilson, *Sri Lankan Tamil Nationalism* (London: Hurst, 2000), 85-88.

155 Moorcraft, *Total Destruction of the Tamil Tigers*, 13.

leader of the Tamil New Tigers in 1972.[156] Prabhakaran used his role in this organization to build a loyal following, and then separated from the group to form the LTTE in 1976. That same year, he ingratiated himself to a mainstream political party, the Tamil United Liberation Front, which gave him insight into the inner workings of the Sri Lankan government.[157] Through these associations and creative leadership, Prabhakaran increased recruitment. As his support grew, he accumulated enough force to degrade the Jaffna police through targeted assassinations.[158]

With this initial success, Prabhakaran used his resources to establish the LTTE as the sole Tamil insurgent movement. Through violence, they culled the number of rival Tamil militant groups from 40 down to five by 1983.[159] The violence continued until Prabhakaran defeated his last rival group, the Tamil Eelam Liberation Organization (TELO), with 24 synchronized attacks in 1986. The simultaneous attacks struck TELO members throughout Sri Lanka, which demonstrated the LTTE's reach. This left the LTTE as the lone prospect for Tamil independence.[160]

Throughout this timeframe, Prabhakaran continued to build his movement to combat the government of Sri Lanka (GoSL). To do this, he first garnered support from India. President Indira Gandhi held a grudge against Sri Lankan President J.R. Jayewardene because she resented his pro-Western sentiments.[161] Prabhakaran leveraged his relationships with Indian politicians to exploit Gandhi's personal grievance and elicit Indian support for the LTTE.[162] India provided the group funds, training, and a safe haven in the Indian state of Tamil Nadu, which allowed the LTTE to build force strength and expand their guerrilla operations within Sri Lanka.[163]

---

156 Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 66.

157 Swamy. *Inside an Elusive Mind*, 37.

158 Swamy. *Inside an Elusive Mind*, 38.

159 Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 97.

160 Moorcraft, *Total Destruction of the Tamil Tigers,* 13.

161 Swamy. *Inside an Elusive Mind*, 67.

162 Swamy. *Inside an Elusive Mind*, 106-107.

163 Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 100.

In addition to India's help, the LTTE also enjoyed support in the form of both money and propaganda from its widespread diaspora. This group consisted of prominent Tamil members who lived in the United States, Canada, and Great Britain. The Tamil diaspora held World Eelam Conferences each year, which raised funds and attention to the LTTE cause.164 The diaspora also provided a network to seek outside assistance. As a result, the LTTE continued to develop its force in anticipation of an engagement with the GoSL.

The LTTE triggered their war against the Sri Lankan state when they ambushed and killed 13 government soldiers on July 23, 1983. Scholars and the media labeled the conflict Eelam War I. The attack precipitated a violent overreaction on the part of the GoSL against the Tamil community. This reaction outraged Tamil Indian citizens, which enabled Prabhakaran to acquire more support from the Tamil community at large, and provoked President Gandhi to further support the LTTE.[165] The LTTE expansion helped increase their force strength for guerrilla operations and expand to conduct naval operations. This improvised navy, the Sea Tigers, enabled the LTTE to benefit from both logistical and offensive maritime support.[166]

This additional support allowed Prabhakaran to employ more forces, which drew a direct military response from the Sri Lankan Army (SLA). The LTTE mobilized 5,000 members trained in India against 16,000 SLA soldiers.[167] The LTTE captured the Jaffna peninsula, but was unable to defend it against an SLA offensive, Operation LIBERATION.[168] This operation pushed the LTTE to its limit, as it fought conventionally in defense of the city of Jaffna.

Eelam War I concluded with India's intervention in the conflict. The LTTE faced certain defeat, but the Indians assisted them with an airdrop of supplies and a threat of

---

164 Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 198-99.

165 Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 111.

166 Swamy. *Inside an Elusive Mind*, 238.

167 S Murari, *The Prabhakaran Saga* (New Delhi: Sage Publications, 2012), 32-33.

168 Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 131.

invasion if the GoSL wiped them out.169 India then foisted the Indo–Sri Lanka agreement on all involved parties. The agreement aimed to create a lasting peace, but denied the LTTE a separate nation. Neither the Tamils nor the GoSL supported the accord.170 Indian Prime Minister Rajiv Gandhi forced the agreement on Sri Lanka in a bid to impose control on what he saw as India's sphere of influence. Gandhi then sent troops to Sri Lanka in the form of the Indian Peacekeeping Force (IPKF) to cement India's position and his legacy.171

The IPKF's entrance into Sir Lanka turned Prabhakaran against his former benefactor, and the LTTE rapidly adjusted their approach. They shifted the locations of their weapons caches and pursued guerrilla tactics against the IPKF, whom they viewed as invaders.[172] Additionally, the Indian presence drew the LTTE and the Sri Lankan government to a temporary alliance, which allowed Prabhakaran to obtain monetary support from the GoSL and continue to develop the insurgency's military capabilities.[173] After three years of tense conflict, the Tigers inflicted enough damage upon the IPKF to cause their withdrawal. This experience not only helped the Tigers develop their forces but it also offered key lessons on how to fight against conventional forces.[174]

Prabhakaran's newfound force strength and successful military experience led him to initiate Eelam War II against the GoSL. From 1990 to 1995, the LTTE applied lessons from their fight against the IPKF using guerrilla tactics. They cleared the Tamil Eelam territory of most government outposts and captured key terrain such as Fort Jaffna.[175] Moreover, the LTTE Sea Tigers neutralized the Sri Lankan Navy, which in the past had afforded the state a significant advantage over the LTTE.[176] Eelam War II ended with a

---

[169] Murari, S. *The Prabhakaran Saga*. New Delhi: Sage Publications, 2012, 33.

[170] Swamy, *Inside an Elusive Mind*, 165.

[171] Bandarage, *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy*, 134-135.

[172] Swamy, *Inside an Elusive Mind*, 166.

[173] Bandarage, *The Separatist Conflict in Sri Lanka*, 152.

[174] Moorcraft, *Total Destruction of the Tamil Tigers*, 23.

[175] Moorcraft, *Total Destruction of the Tamil Tigers*, 28-29.

[176] Swamy, *Inside an Elusive Mind*, 238.

brief ceasefire, as the international community concluded that the GoSL could not defeat the LTTE militarily.[177]

Ultimately, the LTTE's achievements through Eelam War II allowed them to accomplish all their goals with the exception of official recognition as a nation. They commanded a 10,000-strong army, a navy of 3,000, and controlled their territory.[178] Yet they still failed to form an independent Tamil nation. This marked the point that the LTTE began development of its air wing.

D. GENERAL INSURGENT AVIATION DEVELOPMENT

The LTTE decided to develop an air capability, even as they achieved great successes in their fight against both the Sri Lankan Army and Navy on land and at sea. They developed the Air Tigers, with varied results. This section will examine why the LTTE moved forward to develop an air capability, and the factors that allowed them to do it.

The LTTE failed to achieve overall victory through Eelam War II, and Prabhakaran assessed Sri Lankan Air Force (SLAF) operations as a cause of that failure. The SLAF proved critical to the GoSL's efforts in the 1990s (when the LTTE concocted the Air Tigers), in both combat and support roles.[179] The LTTE cut off the SLA from its supply lines on several occasions, which made the SLAF's resupply role imperative for the government forces' continued operations. Additionally, the SLAF's combat aircraft harassed LTTE positions. Throughout the 1990s, the SLAF flew almost 300 air interdiction and close air support sorties against almost 700 Tamil targets. Also, the SLAF carried more than 400,000 soldiers and five million pounds of cargo, which enabled the army to continue operations.[180]

---

[177] Moorcraft, *Total Destruction of the Tamil Tigers,* 33.

[178] Swamy, *Inside an Elusive Mind*, 238.

[179] Murari, *The Prabhakaran Saga,* 192.

[180] Brian Blodgett, *Sri Lanka's Military: The Search for a Mission, 1949-2004* (San Diego, CA: Aventine Press, 2004), 121.

As a result, Prabhakaran explored ways to degrade the SLAF. The LTTE achieved limited success with surface-to-air missiles, which they used to destroy multiple aircraft. The attacks resulted in a change in the SLAF's tactics, but did not greatly affect their employment. Additionally, the SLAF still maintained a robust air force that continued to achieve devastating effects against the LTTE.[181] Because the LTTE's surface-to-air capability only blunted the SLAF, Prabhakaran focused on ways to strike it while its aircraft remained on the ground, their most vulnerable posture. This task required the ability to strike deep into GoSL territory. At the time, the Black Tigers, the LTTE's suicide unit, constituted the insurgency's only capability to operate deep behind enemy lines. However, this unit specialized in assassination and suicide operations, not complex attacks against airfields.[182] Consequently, the LTTE lacked such a strategic attack capability at the time.

Additionally, the LTTE sought formal recognition from the international community.[183] They first pressured the international community through the diaspora's lobbying efforts abroad. Nevertheless, the Tamils' assassination practices discouraged potential international supporters.[184] Even the Tamils' development of the Sea Tigers did not convince other nations to recognize them as a legitimate force. As a result, Prabhakaran shifted his focus to the air domain with the hopes that possession of an air force might elicit international recognition.

Accordingly, Prabhakaran directed the formation of an LTTE air capability, the Air Tigers. Prabhakaran and the LTTE accomplished this task over a period of 12 years. It took this long because the LTTE lacked a state sponsor to help them acquire the needed materiel and training. Their relationship with India remained hostile and the international community condemned the LTTE cause as terrorism.[185] Consequently, Prabhakaran leveraged his

---

[181] Moorcraft, *Total Destruction of the Tamil Tigers,* 98.

[182] Swamy, *Inside an Elusive Mind*, 233; Moorcraft, *Total Destruction of the Tamil Tigers,* 98.

[183] Swamy, *Inside an Elusive Mind*, 274.

[184] Moorcraft, *Total Destruction of the Tamil Tigers,* 118.

[185] Murari, S. *The Prabhakaran Saga,* 185.

diaspora auxiliary and other members of the LTTE to build the assets necessary to develop the capability through an incremental approach.

First, Prabhakaran began developing a pilot corps. A large percentage of the Tigers maintained proficiency in the English language, which is the international aviation language.[186] With the help of the Tamil diaspora, Prabhakaran sent these English speakers abroad to places such as Great Britain and France for pilot and maintenance training, including day and night flying on single engine piston aircraft, the most common type of training aircraft.[187] As a result, Prabhakaran built an initial pilot unit.

Additionally, the LTTE benefited from an educated force, which allowed them to establish cadre. Prabhakaran named LTTE member Vythialingam Sornalingam leader of the Air Tigers. Sornalingam, who held a diploma in aeronautics from the Hindustan Engineering College in India and also worked as an aeronautical engineer for Air Canada, provided Prabhakaran with the expertise required to develop and employ air assets.[188]

Lastly, the diaspora and the LTTE's safe haven allowed them to establish the necessary infrastructure to store aircraft and launch operations. The Tamils no longer maintained a safe haven in India, yet they controlled territory in Sri Lanka so substantial that the SLAF and SLA could not fully monitor them. Prabhakaran used his auxiliary networks to construct three clandestine airfields that the GoSL could not locate.[189] Additionally, he leveraged the diaspora and maritime smuggling networks to import five Czech-made ZLin 143 aircraft from Indonesia after a tsunami in December 2004 disrupted the GoSL's maritime security operations.[190] These fixed-wing aircraft afforded the LTTE the power to strike anywhere throughout Sri Lanka.

---

[186] Bandarage. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy,* 54.

[187] "How the LTTE Got Its Planes and Trained Its Pilots: Kadir Warned Chandrika," *Sunday Times,* April 1, 2007, http://www.sundaytimes.lk/070401/News/101.2news.html.

[188] Bunnell, "From the Underground to the High Ground: The Insurgent Use of Airpower," 3; Joanne Richards, *An Institutional History of the Liberation Tigers of Tamil Eelam (LTTE)* (Geneva: The Graduate Institute, 2014), https://repository.graduateinstitute.ch/record/292651/files/CCDP-Working-Paper-10-LTTE-1.pdf, 27.

[189] Murari, *The Prabhakaran Saga,* 302.

[190] Moorcraft, *Total Destruction of the Tamil Tigers,* 44.

E. GENERAL INSURGENT AVIATION EMPLOYMENT

Figure 5. Map of LTTE-Held Territory in Sri Lanka, 2005–2009.[191]

The LTTE fought its way to the War of Movement Phase when they first employed the Air Tigers.[192] They lost the initiative they gained after Eelam War II, as they lost territory and sought to make the most of their new capability.[193] The LTTE employed the Air Tigers to conduct strategic attacks, as well as air interdiction missions to aid the pursuit of Prabhakaran's dream of an independent Tamil state. The GoSL's

[191] Richards. *An Institutional History of the Liberation Tigers of Tamil Eelam (LTTE).*

[192] Murari, *The Prabhakaran Saga*, 280.

[193] Richards, *An Institutional History of the Liberation Tigers of Tamil Eelam (LTTE).*

weak air defenses provided vulnerabilities for the new air corps to exploit, but the Air Tigers' employment did not provide a decisive victory. This section will discuss how the LTTE employed the Air Tigers and their effects on the conflict environment.

The SLAF and GoSL did not defend their airspace well, which presented an opportunity to the Air Tigers. The SLAF possessed limited counter-air capability, they neglected maintenance of their aircraft, and their pilots displayed limited proficiency. India equipped Sri Lanka with its first air-defense radars in 2005, prior to the LTTE's Air Tiger employment. These systems offered limited detection capabilities because the manufacturers designed them to augment more sophisticated systems, not act independently. India also gave the GoSL 40-mm anti-aircraft artillery (AAA) weapons and training. However, the radars could not effectively detect the type of aircraft the LTTE employed.[194] Additionally, the heat-seeking missiles that the SLAF counter-air jets used could not find the low heat signature of the Air Tigers' piston-driven aircraft, which left another weakness for the LTTE to exploit.[195] Despite the risk, the threat environment still allowed localized air superiority for the Air Tigers to strike.

The Air Tigers conducted three operations that best illustrate their use as a strategic attack and air interdiction asset, the first one being their attack on Katunayake Air Base in the Sri Lankan capital of Colombo. The Air Tigers conducted this operation with the ostensible goals of destroying a sizable portion of the SLAF's combat capability and winning recognition from the global community. In a complex raid on the night of March 22, 2007, they flew to their target low and slow.[196] The operation included an undetected flight of over 600 kilometers and the aircraft's surprise arrival in the target area. Despite the pilots' ability to reach the objective, they failed to hit any aircraft, allowing the SLAF to avoid destruction. However, the attack killed three GoSL soldiers and wounded 14.[197] If the Air Tigers successfully destroyed the SLAF aircraft, the attack

---

[194] Chandraprema, *Gōta's War*, 381.

[195] Chandraprema, *Gōta's War*, 384.

[196] S. Murari, *The Prabhakaran Saga* (New Delhi: Sage Publications, 2012), 302.

[197] Chandraprema, *Gōta's War*, 382.

may have been a "war-terminating" event since the SLA depended on the support of the aircraft stationed there.[198] Nevertheless, the pilots' successful infiltration displayed the LTTE's new ability to project power beyond their safe haven and embarrassed the GoSL.

This first attack resulted in the largest overall response to the aerial operations. The Air Tigers' success led the GoSL to purchase expensive three-dimensional radars from China. The SLAF readied them by November 2007, and employed them in the protection of Colombo.[199] They also increased their defense budget by 44% and bought additional Chinese F-7Gs.[200] India, whose cool relations with the GoSL defined their relationship, instituted an information-sharing program with Sri Lanka. This arrangement improved GoSL effectiveness and allowed the Sri Lankan Navy to decimate the Sea Tigers. India also bolstered its radar defenses along the Palk Strait to protect its nuclear power plants. The LTTE did not foresee the Indian nor the GoSL responses.[201] As a result, the LTTE faced a more formidable force than before the Air Tigers' employment.

In their most successful attack, the LTTE employed their aircraft in a joint operation with the Black Tigers on the Anuradhapura Air Base. On October 22, 2007, the LTTE's air corps along with 21 Black Tigers conducted a raid that included a simultaneous assault on the air base.[202] The Black Tigers infiltrated GoSL territory by ground and synchronized their assault with the Air Tigers by designating a specific time for initiation. In this attack, the LTTE destroyed eight aircraft and killed 13 personnel, their most successful results of any operation.[203] This attack also garnered positive publicity for the LTTE as it timed the strike to coincide with a contested military appropriations vote in the Sri Lankan Parliament. The Tigers planned the strike to

---

198 Chandraprema, *Gōta's War,* 382.

199 Chandraprema, *Gōta's War,* 383.

200 "Asia: Tigers with Wings; Sri Lanka," *The Economist,* May 05, 2007, http://libproxy.nps.edu/login?url=https://search.proquest.com/docview/224005025?accountid=12702.

201 Murari, *The Prabhakaran Saga,* 302.

202 Murari, *The Prabhakaran Saga,* 306.

203 Haroon Siddique, "Tigers Attack Airforce Base,"*The Guardian,* Oct 22, 2007, https://www.theguardian.com/world/2007/oct/22/srilanka.

demonstrate that a budget increase bore little chance to improve the GoSL's military prospects.[204] However, despite its successful destruction of Sri Lankan aircraft and military personnel, this raid resulted in the death of 20 of the 21 Black Tigers, which reflected the heavy toll these operations imposed on the LTTE.[205]

Finally, the Air Tigers continued their operations with a strike that targeted the SLA's defense lines near Welioya in northeastern Sri Lanka in April of 2008. Once again, they attacked at night, as two LTTE aircraft dropped three bombs against GoSL ground positions but missed each target. However, the SLAF scrambled their new fighter jets to pursue the LTTE aircraft in response, which illustrated an aspect of the overall impact that the Tamils' air capability had on the GoSL.[206] The Air Tigers concerned the government to such a degree that it dedicated funds to acquire these interceptors and used them when the opportunity presented itself.

Despite the Air Tigers' limited success, the situation on the ground worsened for Prabhakaran in 2009. With mounting desperation as the LTTE lost territory to GoSL forces, he ordered the Air Tigers to conduct suicide operations. The LTTE flew their last sortie on February 20, 2009. The pilot crashed into the Inland Revenue building, which caused significant damage, but did nothing to save the demoralized Tamil movement.[207] Prabhakaran met his own fate in May 2009, as the SLA executed an offensive against all remaining LTTE.[208] The movement died with Prabhakaran as most members died while fighting the SLA.

---

[204] Moorcraft, *Total Destruction of the Tamil Tigers,* 127.

[205] "13 Troops, 20 Rebels Killed during Battle at Sri Lankan Air Base," *Associated Press,* accessed Sep 9, 2017. https://web.archive.org/web/20071024104805/http://www.iht.com/articles/ap/2007/10/22/asia/AS-GEN-Sri-Lanka-Civil-War.php.

[206] Perera, Sunera C. and Chithralal Jayasingha. "LTTE Planes Dropped 3 Bombs in Welioya,"*Asian Tribune*, April 27, 2008, http://www.asiantribune.com/?q=node/10782.

[207] Murari, *The Prabhakaran Saga,* 302.

[208] Sergei DeSilva-Ranasinghe, *Strategic Analysis of Sri Lankan Military's Counter-Insurgency Operation* (Australia: Future Directions, Inc , 2010), http://futuredirections.org.au/wp-content/uploads/2011/05/1266992558-FDIStrategicAnalysisPaper-12February2010.pdf.

F. THEORIZED AIR UW CONDITIONS AND IMPERATIVES ANALYSIS

This section will examine which theorized conditions and imperatives apply to the LTTE case study. It will assess if the Tamils considered these conditions prior to development of the Air Tigers and if the conditions applied through the Air Tigers' employment. It will also assess if the LTTE leadership followed the theorized imperatives during employment and the subsequent results.

(1) Theorized Condition 1. At least a tactical-level requirement exists that the United States or insurgents cannot satisfy by means other than air. This capability must support the intent of the UW campaign and insurgency.

The LTTE case fulfilled this condition. When Velupillai Prabhakaran decided to create the Air Tigers in 1995, the LTTE failed in its previous efforts to confront the SLAF. The LTTE's use of surface-to-air missiles required the SLAF to change its tactics, but did not blunt its effects. The Black Tigers demonstrated their ability to strike anywhere throughout the island, but did not yet possess the means to perform complex attacks against airfields until 2001. Additionally, the Black Tigers' high attrition rate required the LTTE to employ them only on rare occasions. The Air Tigers presented a more sustainable, renewable option for LTTE leadership to conduct strikes.

Additionally, Prabhakaran desired international recognition, which he hoped the Air Tigers' existence might encourage. However, the Black Tigers' use of assassination and suicide practices de-legitimized Prabhakaran's movement throughout the world. Therefore, even though the Black Tigers successfully attacked an airfield in 2001, Prabhakaran continued to develop the air capability. Despite the Black Tigers' success, they still did not inspire the international community to accept the LTTE's movement. As a result, Prabhakaran proceeded with the Air Tigers because he hoped they could fulfill strategic as well as operational purposes.

(2) Theorized Condition 2. UW advisors and the insurgents have access to safe havens, infrastructure, and suitable equipment within or near conflict zones. If not, the advisors or insurgents can introduce these factors into the environment.

The LTTE partially fulfilled this condition. They controlled Jaffna and the surrounding territory, including locations that allowed them to build their three airfields and complexes. They managed this area to such an extent that they taxed the populace and administered the territory as a de facto government. This gave them freedom of movement and allowed for airfield construction. Also, the Sea Tigers and their shipping operations enabled them to import their aircraft as well as other required maintenance and sustainment items.

The worldwide Tamil diaspora offered a robust external auxiliary. The diaspora contributed resources to the cause and facilitated pilot training. Throughout the course of the LTTE's fight, the diaspora continued to pressure Tamils who lived abroad to contribute money that allowed the LTTE to grow. Additionally, the diaspora played a major role in the acquisition of the Tamils' aircraft in 2005. Thus, although they had no state sponsor, the LTTE had access to equipment.

Nevertheless, the Air Tigers' ineffective employment indicates that their internal safe haven did not support strike training. The SLAF attempted to identify their clandestine airfields prior to the Air Tigers' first strike, so they had to limit aircraft use to avoid detection. Furthermore, the ZLin 143s' bombs habitually missed their targets and their munitions often did not explode. There is no evidence that the Tamils conducted strike training, only pilot training. Thus, it seems the SLAF's interdiction operations restricted the Air Tigers to flying only during operations. A high degree of Air Tiger activity might have helped the SLAF to identify the airfields and successfully engage the aircraft. Therefore, although the LTTE could access equipment and infrastructure, their safe haven did not offer the necessary security to support the Air Tigers' success.

(3) Theorized Condition 3. The population possesses individuals with aviation and maintenance experience.

The LTTE fulfilled this condition because the Tamil culture valued education. The leader of the Air Tigers earned his degree in aeronautics, and was representative of many individuals within the Tamil community, since the LTTE's initial recruitment occurred in universities. This pool of educated Tamils provided the LTTE with capable individuals who could learn to operate in the air, as well as maintain and arm an aircraft. Lastly, the Tamils' traditional mastery of English proved essential because English is the international language of aviation. This permitted them to train anywhere in the world.

(4) Theorized Condition 4. The insurgency must possess the excess capacity needed to produce, sustain, and integrate an insurgent air capability.

The LTTE partially fulfilled this condition prior the development of the Air Tigers. When the LTTE began development of the Air Tigers, they maintained access to a large amount of resources. They controlled territory and collected tax revenues. Throughout the 1990s, they fought well against the SLA and against the Sri Lankan Navy. Therefore, they maintained a well-developed force, able to dedicate the manpower needed to develop the air capability.

However, despite their manpower and resource excess capacity, the Tamils' slow sortie generation points to a shortfall somewhere in their sustainment, with limited munition production as the possible reason. The munitions all required custom fabrication and often failed. This fabrication was difficult and time consuming. Therefore, it seems the LTTE possessed the equipment to prepare the munitions, but not enough capacity to accomplish it quickly. However, it is also possible that it took the LTTE time to develop each target sufficiently for Prabhakaran to approve the operation. In conclusion, although the LTTE possessed the ability to man, fuel, and maintain their aircraft, their slow sortie generation makes this condition only partially fulfilled.

(5) Theorized Condition 5. The enemy's air defense systems are vulnerable to the proposed insurgent air capability.

This study could not assess the LTTE's knowledge of the GoSL's air defense systems when they made the decision to initiate air capability development, but the Air Tiger execution showed that the condition was present. When Prabhakaran made his decision, the GoSL did not maintain a functioning air-defense system. In the 1970s and 1980s, the GoSL funded the SLAF in such a deficient manner that it resorted to aerial tourism to fund its own training. However, by the mid-1990s the SLAF acquired air assets capable of counter-air missions. These assets included Israeli KFir and Chinese F-7 jets, which the GoSL also modified to conduct air-to-ground strikes. Nevertheless, the best description for the SLAF at the time portrayed them as a mobility force, not one suited for strike and counter-air missions. This combination of no radar defense systems and few counter-air assets with limited capabilities allowed the LTTE to achieve localized air superiority due the weakness of the GoSL's air defenses. The LTTE demonstrated this with their ability to fly undetected to the target in the Katunayake Airbase attack. Thus, the GoSL's air defenses proved vulnerable to LTTE exploitation during the Air Tigers' employment, though it is unclear exactly what Prabhakaran knew at the time he decided to develop an air capability.

(6) Theorized Imperative 1. The employment of the air capability cannot elicit a response from the state that the insurgency cannot endure.

The Air Tigers did not follow this imperative. The responses from both India and the GoSL hurt the LTTE. They suffered total defeat soon after the introduction of their air capability. Some scholars claimed that the response to the Air Tigers directly led to the LTTE's destruction, and the increase in the Sri Lankan defense budget supports that idea. Additionally, the LTTE did not foresee India's response, whose information sharing and cooperation with the once-hostile GoSL led to devastating effects against the insurgency. Furthermore, it seems the LTTE decided that they could repel any response, as they initiated conventional conflict with the GoSL in 2006, before the development of their air wing. Either way, the LTTE miscalculated the government and international response, as

well as their own capabilities when they developed UW airpower. In the end, the Air Tigers hurt more than they helped the cause.

(7) Theorized Imperative 2. An insurgent command must synchronize the efforts of the insurgent air and ground elements to produce optimal effects.

The LTTE followed this imperative in execution. The Air Tigers integrated into the ground operations through their command structure. Sornalingam gave total allegiance to Prabhakaran, which made the Air Tigers subordinate to the cause. As a result, each Air Tiger mission required approval from the LTTE commander. They tried to fill the identified need as well as possible in their attempts to destroy the SLAF and attack strategic targets.

The Air Tigers also conducted a joint strike with the Black Tigers. The operation illustrated that cooperation took place at the leadership level with Prabhakaran and Sornalingam collaborating before the attack. However, it does not indicate full-scale integration. The need for operational security resulted in a degree of compartmentalization between the tactical-level units, so the Air Tigers and Black Tigers never directly coordinated. Yet, despite this, they successfully executed the joint mission. This leads to the conclusion that the Air Tigers met this imperative in employment.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. CONCLUSIONS

A. INTRODUCTION

This study introduced theorized conditions and imperatives needed to develop an insurgent air capability. Then it tested these conditions and imperatives against two historic cases. This section will reconcile the observations from each case study, and then present the conclusions drawn from them. In addition, this chapter will present noteworthy observations the study found but that are outside the scope of the research.

B. RESTATED RESEARCH QUESTION

What are the conditions under which the United States should develop an insurgent air capability during a UW campaign and how should that capability be employed?

C. RESTATED LIMITATIONS TO THE STUDY

Limitation 1. Neither case study involves a strict UW scenario. Only the Laos case involves the United States' development of an indigenous air capability, but these tribal forces were still loosely affiliated with the Laotian government, yet fought against an occupying power. The Tamil Tigers case was an insurgency, but not a UW effort. They were one of the few insurgencies able to build its forces sufficiently to develop separate branches of service. Although this may limit the comprehensiveness of the conclusions, there are no other historic examples of insurgent airpower employment during a UW effort.

Limitation 2. The guerrilla air assets within each case consist entirely of manned aircraft, which limits the versatility of the conclusions in their application to other modalities of air support, such as unmanned aircraft. However, this study can provide general observations of insurgent airpower that future U.S. advisors can apply to the employment of more modern technology in future tests.

Limitation 3. This study does not address development of clandestine air networks prior to the start of a conflict. Clandestine network development prior to

a conflict may serve a plethora of situations, both conventional and unconventional. Thus, this activity is not exclusive to a UW effort. Additionally, the Laos and Tamil cases do not include instances of pre-conflict clandestine air network development. For these reasons, this study framed the research to the strict definition of UW within its doctrinal phases.

D. THEORIZED CONDITION 1

- **At least a tactical-level requirement exists that the United States or insurgents cannot satisfy by means other than air. This capability must support the intent of the UW campaign and insurgency.**

The presence and importance of this condition existed in both case studies. U.S. advisors needed a way to provide reliable air support to the Hmong guerrillas, a tactical level requirement. The Tamils desired a means to counter the SLAF and establish international legitimacy, which constituted operational and strategic level requirements. Both groups attempted to meet these requirements by several methods before creating an air capability. In each case, the requirement acted as a trigger to explore the development of the insurgent air capability. Thus, this condition may not just be necessary for U.S. advisors to consider prior to development of an insurgent air capability, but it can act as an indicator for when consideration for the insurgent air capability should start.

E. THEORIZED CONDITION 2

- **UW advisors and the insurgents have access to safe havens, infrastructure, and equipment within or near conflict zones. If not, the advisors or insurgents can introduce these factors into the environment.**

This condition proved relevant to each case. The United States had access to an external safe haven in Udorn and internal safe haven in Long Tieng. U.S. advisors did not intend for the capability to be long-term, so they did not require the construction of a robust insurgent infrastructure for the Hmong to maintain the capability. Udorn allowed for the United States to provide all aircraft and maintenance needed to facilitate the training and employment of the Hmong pilots. The Tamil diaspora provided the LTTE the resources to train the pilots, acquire aircraft, and smuggle them onto the island.

Additionally, the Tamils maintained an extensive internal safe haven that provided their aircraft security and infrastructure for maintenance and storage. However, an external safe haven did not exist.

Although this condition was important in both cases, the LTTE case highlights the need for safe havens to support aerial training just as much as security and infrastructure. The Air Tigers' poor accuracy throughout their strike operations and the SLAF's efforts to identify their clandestine airfields implies that the Air Tigers could not adequately train for strike operations inside their internal safe haven. If the Air Tigers increased their air activity, it may have led to the SLAF's discovery of their airfields and infrastructure. Additionally, no evidence exists that the Air Tigers trained for strike operations on the aircraft they used during their employment. It seems the internal safe haven did not afford the LTTE the ability to prepare the pilots to a satisfactory proficiency level for successful strikes. Therefore, during evaluation of an internal safe haven's suitability, U.S. advisors and the insurgents need to consider its ability to support training as well as infrastructure and security, especially if the insurgency does not have access to an external safe haven.

F. THEORIZED CONDITION 3

- **The population possesses individuals with aviation and maintenance experience.**

The presence of this condition manifested itself differently in each case study. The Hmong had no formal education system, written language, or familiarity with contemporary aviation technology. The Tamils, who spoke English, possessed educated individuals, some with degrees in aeronautics. Both groups successfully developed their air capabilities. Notwithstanding this success, experts on the Hmong case attribute the long development process to the Hmong's lack of education. The Tamils also experienced a long development process but this study attributes the Tamils' delay to slow acquisition of aircraft and construction of infrastructure, not education. Therefore, the presence of an educated population is helpful, but not necessary. The two cases show that individuals from either demographic can successfully learn to operate in the air domain. On the other hand, this study assesses that this condition becomes more

important as the urgency for the air capability increases. If the insurgency needs an air capability immediately, then an educated population becomes more imperative. UW advisors should evaluate a population's education level prior to the development of an insurgent air capability, but it should not be considered a prerequisite.

G. THEORIZED CONDITION 4

- **The insurgency possesses the excess capacity needed to produce, sustain, and integrate an insurgent air capability.**

Both the Hmong and the Tamils possessed the excess capacity needed to develop their respective air capabilities. Before they initiated development of the Hmong pilot corps, Army and Air Force advisors did not agree that the Hmong possessed the spare talent necessary to operate simultaneously in both the air and ground domains. However, it became evident during employment that the SGUs could still successfully operate without the capable personnel that Vang Pao removed for pilot training. Additionally, The Tamils possessed a large ground and naval force prior to the development of its air capability. They had the spare resources to construct airfields, acquire aircraft, and train pilots. Also, the LTTE completed these actions incrementally, which precluded a bulk diversion of resources. Therefore, each had the excess capacity to develop the specific air capability their leadership planned to create.

In each case, the type of air capability and its intended use was in line with the resources available. Manned aircraft constituted the insurgent air capability in each case, which required regular maintenance and sustainment. U.S. advisors intended the Hmong to be a temporary capability and provided them sustainment support. They only required the Hmong to dedicate personnel for pilots. The Tamils intended the capability to exist indefinitely, but did not have a sponsor, so they required support from all components of their insurgency to develop the capability. Thus, each element developed similar capabilities but required a different amount of resources to build it. Therefore, when future UW advisors consider developing an insurgent air capability they should first identify a specific capability and the support requirements that accompany it based on the

intended use of the capability. This will allow UW advisors to determine if the insurgency possesses excess capacity to meet the intent of the insurgent air effort.

H. THEORIZED CONDITION 5

- **The enemy's air defense systems are vulnerable to the proposed insurgent air capability.**

This study cannot show that leadership within both cases considered this condition prior to developing the insurgent air capabilities. But the employment of each force demonstrates that this condition was present and relevant. In the Hmong case, U.S. advisors knew the NVA's air defense capabilities prior to the development of the Hmong pilots and chose suitable aircraft for that specific environment. Subsequently, the Hmong pilots were able to operate within the area of operations. On the other hand, Prabhakaran's knowledge of the GoSL's air defense capabilities remains unknown, yet the GoSL's weak air defenses allowed the Air Tigers to infiltrate GoSL airspace undetected to conduct their raids. Although it is possible Prabhakaran did not consider this condition, its presence still contributed to the Air Tigers' successful employment.

Therefore, future UW advisors need to consider this condition because it ensures that the insurgent air capability will be able to operate in the conflict area. Insurgents must deliberately select an air capability based on what it knows about the state's air defense capabilities. This will increase the insurgent air capability's probability for success and ensure that the resources dedicated to the insurgent air capability will not be wasted.

I. THEORIZED IMPERATIVE 1

- **The employment of the air capability cannot elicit a response from the state that the insurgency cannot endure.**

The two cases illustrate the importance of this imperative. WATERPUMP employed the Hmong pilots mostly at the tactical level, which allowed them to disrupt NVA activity but did not provoke an overwhelming reaction from the NVA against the Hmong. Moreover, the introduction of the Hmong pilots correlated with U.S. advisors' observations that the NVA felt a decisive engagement with the tribe might be too costly.

Thus, it is possible that the Hmong pilots deterred the NVA. Therefore, WATERPUMP and the Hmong leadership's adherence to this imperative not only allowed them to employ the Hmong pilots appropriately, but it may have also had deterrent effects.

Conversely, the Air Tigers' employment as a strategic attack platform elicited a devastating response from the GoSL and India. The GoSL increased their defense budget by 44%, India greatly improved its air defense systems, and it began an information-sharing program with the GoSL. Author S. Murari directly attributes the LTTE's demise to this influx of resources. Furthermore, India reacted not just to the employment of the Air Tigers, but simply to their existence. Murari states that India's frustration resulted from the LTTE's possession of any air capability, not just their employment methods. Accordingly, the LTTE incited a harsh response simply by possessing an air capability, regardless of the employment of that capability. This reaction illustrates that U.S. advisors and policy makers must consider this imperative not only in employment, but in development as well.

J. THEORIZED IMPERATIVE 2

- **An insurgent command must synchronize the efforts of the insurgent air and ground elements to produce optimal effects.**

Though the insurgent leadership in each case used their air capabilities differently, this imperative proved relevant in both case studies. General Vang Pao discussed specific targets and planned alongside WATERPUMP advisors for Operations OFF BALANCE and ABOUT FACE. This cooperation involved tactical level employment of the Hmong pilots. Clearly the insurgent air and ground components cooperated at the tactical level. For the Tamils, Prabhakaran directly approved all Air Tiger operations. However, this study found no evidence that the Tamils' air and ground components ever communicated at the tactical level. Even during the only joint operation that involved the Air Tigers and Black Tigers, the LTTE suicide squad, there is no evidence of tactical coordination. Each Air Tiger strike focused on operational level targets, which did not require direct coordination with the ground Tiger units. This resulted in a lack of tactical level cooperation, but did not significantly affect the execution of either the ground or air

Tamil operations. These two cases show that synchronization of the air and ground insurgent elements is important, but must exist at least at the level of operation where the insurgents employ the air capability.

Additionally, the Hmong pilots' high frequency of operations illustrates the need for the insurgent command to manage the insurgent air capability, not only synchronize it. The Hmong pilots maintained a high frequency of operations that often led to damaged aircraft. This correlated with distressed U.S. maintenance mechanisms that struggled to repair aircraft. Thus, it seems General Pao and WATERPUMP advisors abused the air capability. To avoid this mistake, insurgent leaders and U.S. advisors need to properly prioritize operations and balance limited insurgent maintenance resources with operations to allow the air capability to be available when necessary.

K. CONCLUSION

This study concludes that four of the five theorized conditions and both imperatives are valid. The condition that required an educated population could not be substantiated. Therefore, a population's education and familiarization with technology should be a consideration but not a requirement. Other than this exception, the remaining four conditions and two imperatives are validated in both case studies.

Additionally, this study found that the conditions and imperatives, though distinct, interact with each other. In other words, the conditions can affect each other. For example, the sophistication of the enemy's air defense systems will help determine if the insurgency has the excess capacity to develop a capability that is suitable for operations. Thus, as U.S. advisors use these conditions and imperatives as guidelines, they need to observe how they affect each other for a better understanding of the combat environment.

Table 2. Finalized Conditions and Imperatives for an Insurgent Air Capability

Conditions needed for Insurgent Air Development
Condition 1: At least a tactical-level requirement exists that the United States or insurgents cannot satisfy by means other than air. This capability must support the intent of the UW campaign and insurgency.
Condition 2: UW advisors and the insurgents have access to safe havens, infrastructure, and equipment within or near conflict zones. If not, the advisors or insurgents can introduce these factors into the environment.
Condition 3: The insurgency possesses the excess capacity needed to produce, sustain, and integrate an insurgent air capability.
Condition 4: The enemy's air defense systems are vulnerable to the proposed insurgent air capability.
Imperatives for Insurgent Air Employment
Imperative 1: The employment of the air capability cannot elicit a response from the state that the insurgency cannot endure**.**
Imperative 2: An insurgent command must synchronize the efforts of the insurgent air and ground elements to produce optimal effects.

L. NOTEWORTHY OBSERVATIONS

(1) The Hmong's overconfidence in their air capability provoked them to overextend their force capability.

Vang Pao agreed to operation ABOUT FACE based on having an air capability. Although the air proved successful at the tactical level, it could not independently convert these tactical successes into an operational victory. ABOUT FACE intended to seize and hold territory indefinitely, not seize it for a short duration. U.S. advisors expected the SGUs to meet this objective, yet the guerrilla forces were not strong enough to maintain a conventional defense of a large area. The Hmong pilots also proved unable to support that task, yet they played a role in Pao's decision to remain aggressive. Vang Pao's overconfidence in airpower led to a miscalculation in strategy. This illustrates that UW advisors need to understand that air capabilities may provide an insurgency with a powerful tool, but that it cannot drive the pacing and phasing of the war. The main effort of an insurgency needs to remain the ground campaign since it is ultimately the force that will both interact with the population and hold terrain.

(2) The Hmong and Tamil cases imply that an external safe haven is more advantageous than an internal one.

The Hmong's external safe haven afforded them more security and sustainment than that of the Tamils' internal one. The Hmong's external safe haven had several distinctions from the Tamils' internal one because it allowed the Hmong to keep their air wing away from the NVA threat. This allowed them to develop and sustain the air capability without fear of NVA interference. Conversely, the Tamils had to circumvent the GoSL throughout the development and employment of the Air Tigers. This restricted their ability to develop an effective air corps, constraining their flexibility to train for combat missions. This study cannot say that an internal safe haven will never sufficiently support an insurgent air capability, but these cases imply a degree of superiority for external safe havens.

(3) Neither the Tamils nor the Hmong developed an insurgent air capability until they progressed to the later insurgent phases.

The Hmong initiated guerrilla operations against the NVA and possessed a significant ground force years before the development of the Hmong pilots. The Tamils waited until they established a large safe haven and developed a naval force prior to the establishment of the Air Tigers. This consistency illustrates two points. First, neither insurgency encountered a requirement that only airpower could satisfy until they reached the later insurgent phases. Initially, their immediate goals focused on developing their ground force and generating greater guerrilla activity. Second, the resource intensive nature of airpower required time for U.S. advisors and the indigenous forces to acquire the proper equipment and develop the ability to employ it. Thus, the development of a manned insurgent air capability is not advisable until later in the Guerrilla Warfare Phase or the War of Movement Phase of an insurgency.

M. AREAS OF FUTURE STUDY

This study intended to test several conditions needed to develop an insurgent air capability along with employment principles for that capability. However, since this

study involved several limitations, the authors have identified several areas of future study to refine its conclusions.

First, practitioners should test the conditions and imperatives of this study on unmanned air capabilities. Currently, advances in technology offer insurgents ample opportunity to obtain and utilize unmanned assets. The availability and low visibility of unmanned air assets make them potentially useful to insurgents. These assets are distinct from manned air capabilities and may require different conditions and employment imperatives.

Second, assessing what AFSOC can do to contribute to a pending UW campaign prior to conflict initiation is an area for future study. This study's cases focused on the development of an insurgent air capability after the United States initiated a UW campaign. A future study examining how AFSOC's pre-conflict activities can help shape an environment for future insurgent air capability offers potential benefit. The cases in this study illustrated that building an insurgent air capability needs certain conditions and requires time. Activities prior to conflict may allow AFSOC to help set the required conditions and shorten the timeline for effective employment of UW air.

Lastly, examining AFSOC's current structure and its suitability to support UW advisory efforts is another area of future study. UW is a complex and distinct concept that requires suitable individuals that have the flexibility to operate in a unique environment. An examination into how well AFSOC's current organizational structure prepares its members to operate in the UW environment can help refine how it conducts UW advisory efforts.

LIST OF REFERENCES

Ahern, Thomas L. *Undercover Armies: CIA and Surrogate Warfare in Laos, 1961–1973.* Washington, DC: Central Intelligence Agency. 2006.

Anthony, Victor B., and Richard R. Sexton. *The United States Air Force in Southeast Asia: The War in Northern Laos, 1954–1973*. Washington, DC: Office of Air Force History, 1993.

Association of Tamils of Sri Lanka in the USA. "Extent of Territorial Control in Sri Lanka." Accessed August 28, 2017. http://www.sangam.org/taraki/congress/05-07_Areas_of_Control.php.

Associated Press. "13 Troops, 20 Rebels Killed during Battle at Sri Lankan Air Base." Accessed Sep 9, 2017. https://web.archive.org/web/20071024104805/ http://www.iht.com/articles/ap/2007/10/22/asia/AS-GEN-Sri-Lanka-Civil-War.php.

Bandarage, Asoka. *The Separatist Conflict in Sri Lanka: Terrorism, Ethnicity, Political Economy.* New York: Routledge, 2009.

Blodgett, Brian. *Sri Lanka's Military: The Search for a Mission, 1949–2004.* San Diego, CA: Aventine Press, 2004.

Bunnell, John G. "From the Underground to the High Ground: The Insurgent use of Airpower," Master's thesis, Air War College, 2011. http://www.dtic.mil/cgi-bin/ GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=AD1018700

Chandraprema, C.A. *Gōta's War: The Crushing of Tamil Tiger Terrorism in Sri Lanka*. Colombo: Ranjan Wijeratne Foundation, 2012.

Conboy, Kenneth, and James Morrison. *Shadow War: The CIA's Secret War in Laos*. Boulder, CO: Paladin Press, 1995.

Connable, Ben, and Martin C Libicki. *How Insurgencies End*. Santa Monica, CA: RAND Corporation, 2010.

Department of the Air Force. *Basic Doctrine.* Vol. 1. U.S. Air Force, 2016. http://www.doctrine.af.mil/Portals/61/documents/Volume_1/Volume-1-Basic-Doctrine.pdf?ver=2017-09-13-150324-650.

Department of the Air Force. *Counterair Operations.* Annex 3-1. U.S. Air Force, 2016. http://www.doctrine.af.mil/Portals/61/documents/Annex_3-01/3-01-ANNEX-COUNTERAIR.pdf?ver=2017-09-19-153800-487.

Department of the Air Force. *Counterland Operations.* Annex 3-3. U.S. Air Force, 2017. http://www.doctrine.af.mil/Doctrine-Annexes/Annex-3-03-Counterland-Ops.

Department of the Air Force. *Global Integrated Intelligence, Surveillance & Reconnaissance Operations.* Annex 3-3. U.S. Air Force, 2015. http://www.doctrine.af.mil/Doctrine-Annexes/Annex-2-0-Global-Integrated-ISR-Ops.

Department of the Air Force. *Strategic Attack.* Annex 3-70. U.S. Air Force, 2017. http://www.doctrine.af.mil/Portals/61/documents/Annex_3-70/3-70-Annex-STRATEGIC-ATTACK.pdf?ver=2017-09-19-161550-053

Department of the Army. *Unconventional Warfare*. ATP No. 3-5.1. United States Army, 2013.

DeSilva-Ranasinghe, Sergei. *Strategic Analysis of Sri Lankan Military's Counter-Insurgency Operation.* Australia: Future Directions, Inc, 2010. http://futuredirections.org.au/wp-content/uploads/2011/05/1266992558-FDIStrategicAnalysisPaper-12February2010.pdf.

The Economist. "Asia: Tigers with Wings; Sri Lanka." May 05, 2007. http://libproxy.nps.edu/login?url=https://search.proquest.com/docview/224005025?accountid=12702.

Encyclopedia Britannica. "Sri Lanka." Accessed 9/9/2017. https://www.britannica.com/place/Sri-Lanka.

Ericson, John D. "Translating the Untranslated: Djebar's Le blanc de l'Algerie." *Research in African Literatures* 30, no. 3 (1999): 95–107.

Haas, Michael E. *Apollo's Warriors: United States Air Force Special Operations during the Cold War*. Maxwell AFB, AL: Air University Press, 1997.

Hartman, Scott. "Airpower Support of Unconventional Warfare." Master's Thesis, U.S. Army Command and General Staff College, 2009. http://handle.dtic.mil/100.2/ADA512516

Joint Chiefs of Staff. *Counterinsurgency*. JP-3-24. Joint Chiefs of Staff, 2013. http://dtic.mil/doctrine/new_pubs/jp3_24.pdf.

Joint Chiefs of Staff. *Joint Operations.* JP 3-. Joint Chiefs of Staff, 2017.

Joint Chiefs of Staff. *Special Operations*. JP-3-05. Joint Chiefs of Staff, 2016. http://dtic.mil/doctrine/new_pubs/jp3_05.pdf

Leary, William M. “CIA Air Operations in Laos, 1955–1974.” CIA. 6/27/2008. https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/winter99-00/art7.html.

Leary, William M. “CIA Air Operations in Laos, 1955–1974.” *Journal of Military History* no. 53 (1995) 71–86.

McCormick, Gordon H. and Steven B. Horton, and Lauren A. Harrison. “Things Fall Apart: The Endgame Dynamics of Internal Wars.” *Third World Quarterly* 28, no. 2 (Mar 1, 2007): 321–367. doi:10.1080.

Moorcraft, Paul L. *Total Destruction of the Tamil Tigers.* Barnsley, UK: Pen & Sword Military, 2013.

Murari, S. *The Prabhakaran Saga*. New Delhi: Sage Publications, 2012.

My Military Page. “Thailand Memories.” accessed September 10, 2017. http://www.bobandeva.com/mil/Thailand_Memories.htm.

Parker, James E. *Codename Mule: Fighting the Secret War in Laos for the CIA.* Annapolis: Naval Institute Press, 1995.

Paul, Christopher. *Paths to Victory*. Santa Monica, CA: RAND Corporation, 2013.

Perera, Sunera C. and Chithralal Jayasingha. “LTTE Planes Dropped 3 Bombs in Welioya.” *Asian Tribune*, April 27, 2008. http://www.asiantribune.com/?q=node/10782.

Quincy, Keith. *Hmong: History of the People.* Cheney: Eastern Washington University Press, 1988.

Richards, Joanne. *An Institutional History of the Liberation Tigers of Tamil Eelam (LTTE)*. Geneva: The Graduate Institute, 2014. https://repository.graduateinstitute.ch/record/292651/files/CCDP-Working-Paper-10-LTTE-1.pdf.

Robbins, Christopher. *The Ravens: The Men Who Flew in America’s Secret War in Laos*. New York: Crown Publishing Inc, 1987.

Rothstein, Hy. *Afghanistan and The Troubled Future Of Unconventional Warfare*. Annapolis: Naval Institute Press, 2006.

Shastri, Amita. “Estate Tamils, The Ceylon Citizenship Act of 1948 and Sri Lankan Politics.” *Contemporary South Asia* vol 8, no. 1 (March 1999).

Siddique, Haroon. “Tigers Attack Airforce Base.” *The Guardian,* Oct 22, 2007. https://www.theguardian.com/world/2007/oct/22/srilanka.

Stuart-Fox, John and Mary Kooyman. *Historical Dictionary of Laos*. New Jersey: The Scarecrow Press Inc., 1992.

The Sunday Times. "How the LTTE Got Its Planes and Trained Its Pilots: Kadir Warned Chandrika."April 1, 2007. http://www.sundaytimes.lk/070401/News/ 101.2news.html.

Swamy, M. R. Narayan. *Inside an Elusive Mind, Prabhakaran: The First Profile of the World's Most Ruthless Guerrilla Leader*. Sri Lanka: Vijitha Yapa Publications, 2003.

U.S. Department of State. "Foreign Terrorist Organizations." Accessed August 31, 2017. https://www.state.gov/j/ct/rls/other/des/123085.htm.

Warner, Roger. *Back Fire: The CIA's Secret War in Laos and Its Link to the War in Vietnam*. New York: Simon and Schuster, 1995.

Weiss, Gordon. *The Cage*. London: Random House, 2011.

Wilson, A. Jeyaratnam. *Sri Lankan Tamil Nationalism.* London: Hurst, 2000.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Ft. Belvoir, Virginia

2. Dudley Knox Library
   Naval Postgraduate School
   Monterey, California