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UNCONVENTIONAL WARFARE LOGISTICS: UTILIZING NETWORKED NON-STANDARD APPROACHES AND DECEPTION

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THESIS

UNCONVENTIONAL WARFARE LOGISTICS: UTILIZING NETWORKED NON-STANDARD APPROACHES AND DECEPTION

by

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December 2014

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13. ABSTRACT (maximum 200 words)

Throughout history, many military campaigns, conventional or irregular, have failed when they were not well supported logistically. "ARSOF 2022," written by Charles Cleveland and appearing in the spring 2013 issue of *Special Warfare*, states that United States Army Special Operations Forces will be the lead component to conduct unconventional warfare (UW) in the future. However, a 2013 RAND Arroyo Center study, *Non-Standard Logistics Support for Unconventional Warfare: Sourcebook for Planning and Capability Development*, written by Matthew E Boyer et al. on "non-standard logistics" identified significant gaps in existing doctrine, authorities, training, and other areas that support such operations. While providing recommendations, RAND did not provide specific solutions to the shortcomings.

This thesis proposes a general model to conduct UW resupply, and operationalizes this model in the form of a UW logistics planning and execution cycle. The six-step cycle (RANDOM), begins with receipt of mission (R). Next, a multi-categorical UW logistics feasibility assessment (A) occurs. Following this assessment, a non-standard (N) resupply approach is chosen, and a supporting military deception plan (D) is incorporated into the approach. The resupply operation (O) is then executed, and feedback from various sources allows modifications (M) and improvements to the cycle for future resupply operations. This thesis concludes with recommendations for leaders and planners alike and offers a solution to the current lack of existing doctrine surrounding this topic.

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UNCONVENTIONAL WARFARE LOGISTICS: UTILIZING NETWORKED NON-STANDARD APPROACHES AND DECEPTION

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requirements for the degree of

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ABSTRACT

Throughout history, many military campaigns, conventional or irregular, have failed when they were not well supported logistically. “ARSOF 2022,” written by Charles Cleveland and appearing in the spring 2013 issue of *Special Warfare*, states that United States Army Special Operations Forces will be the lead component to conduct unconventional warfare (UW) in the future. However, a 2013 RAND Arroyo Center study, *Non-Standard Logistics Support for Unconventional Warfare: Sourcebook for Planning and Capability Development*, written by Matthew E Boyer et al. on “non-standard logistics” identified significant gaps in existing doctrine, authorities, training, and other areas that support such operations. While providing recommendations, RAND did not provide specific solutions to the shortcomings.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADP	Army doctrine publication
ADRP	Army doctrine reference publication
ARSOF 2022	Army Special Operations Forces 2022
ATV	all-terrain vehicle
AWG	Asymmetric Warfare Group
BEST	Border Enforcement Security Task Force
CI	counterintelligence
CIA	Central Intelligence Agency
COE	contemporary operating environment
CPBO	Customs and Border Protection officer
COIN	counter insurgency
DEA	Drug Enforcement Agency
DHS	Department of Homeland Security
ESC	Expeditionary Sustainment Command
FM	field manual
GPF	general purpose forces
HIDTA	High Intensity Drug Trafficking Agency
ICBM	intercontinental ballistic missile
ICE	Immigration and Customs Enforcement
ID	identification document
IO	information operations
ISA	intermediate staging area
JP	joint publication
JPADS	Joint Precision Airdrop System
LOC	lines of communication
LTG	lieutenant general
MILDEC	military deception
NDIC	National Drug Intelligence Center
NSL	non-standard logistics
POE	point of entry

POL	pattern of life
PRC	People’s Republic of China
PSVC	prepaid stored value cards
SIG	Smuggling Interdiction Group
SFOD-A	Special Forces Operational Detachment—Alpha
SOF	Special Operations Forces
SOP	standard operating procedures
SSGN	subsurface guided missile nuclear powered
STOL	short takeoff and landing
TC	training circular
TCO	trans-national criminal organization
TSC	theater sustainment command
TTF	Tunnel Task Force
TTPs	tactics, techniques, and procedures
USASOC	United States Special Operations Command
USSOCOM	United States Special Operations Command
USSR	Union of Socialist Soviet Republics
UW	unconventional warfare
UWOA	unconventional warfare operations area

EXECUTIVE SUMMARY

Like many conventional military campaigns, an unconventional warfare (UW) campaign only succeeds if it is well supported logistically. This thesis begins by providing context to the importance of this topic, and then highlights potential doctrinal gaps by summarizing existing doctrine and conducting a historical survey of cases where unconventional warfare campaigns lacked logistical support. A 2013 RAND Arroyo Center study on non-standard logistics (NSL) also identified current doctrinal gaps, providing both general and specific recommendations to United States Army Special Operations Command (USASOC) leaders.[1] However, it did not produce a general UW logistics resupply model for future implementation in the contemporary operating environment (COE). This thesis builds upon the RAND study. It provides a general model to conduct non-standard resupply by utilizing networked, non-standard approaches and deception. This general model is operationalized through a six-step UW logistics planning and execution cycle.

Doctrinal Gaps

In the four doctrinal publications and the 70-year historical survey of various UW campaigns summarized in this thesis, four types of logistical sustainment were identified. These are aerial resupply, battlefield recovery, local procurement, and movement via the auxiliary. Aerial resupply consistently remains the leading method cited to sustain UW campaigns logistically. Given the reliance on external resupply by aerial assets, logistically sustaining a UW campaign in countries with formidable air defense assets is problematic. Also, the need for additional forms of external resupply exist, especially when internal resources lack the capability to sustain a UW campaign and aerial resupply proves infeasible. Although doctrine such as *FM 3-05.130* and *TC 18-01* call for utilizing the auxiliary and caching supplies, the supplies still require movement from an external

[1] Matthew E. Boyer, Dwayne M. Butler, John Halliday, Kristen Klinghoffer, and Roy Speaks, *Non-Standard Logistics Support for Unconventional Warfare: Sourcebook for Planning and Capability Development*, RAND Arroyo Center, June 2013, 7. This document is classified Secret//NOFORN. (This information is unclassified).

site (perhaps another country) to the unconventional warfare operations area (UWOA).[2] There is a requirement for a mechanism, likely "non-standard" in nature, to facilitate such movement.

A General UW Logistics Model

This thesis creates a general UW logistics model that is operationalized through a six-step UW logistics planning and execution cycle, with the acronym RANDOM. First, a mission to conduct UW resupply is received: Receipt of mission/Resupply request (R). Second, the multi-categorical UW logistics assessment tool provides a model to gain a thorough situational understanding of the UW environment: Assessment (A). Third, an approach to conduct UW resupply is developed: Non-standard approach (N). This approach may be conventional in nature, utilizing historical resupply techniques or it may be non-standard. The UW environment will guide the approach based upon the assessment conducted previously. Fourth, a coordinated, synchronized military deception plan is developed to shape and support the resupply operation: Deception (D). Fifth, the resupply operation is executed: Operation execution (O). Sixth, feedback gathered during the execution of the resupply operation provides additional atmospherics that are used to refine the assessment of the UWOA and modify the deception plan if necessary: Modification (M). The cycle is completed with the receipt of another UW logistical resupply mission.

It is important to note that the UW logistics planning and execution cycle can be implemented to both transport supplies into a UWOA, or remove them. The steps within this cycle remain the same. Figure 1 visually depicts the UW logistics planning and execution cycle. The remainder of this thesis expands understanding and execution of the cycle. It provides additional models to frame and execute various steps in the cycle.

[2] Department of the Army, *Army Special Operations Forces Unconventional Warfare* (FM 3-05.130) (Washington, DC: Government Printing Office, 2008); Department of the Army, *Special Forces Unconventional Warfare* (TC 18-01) (Washington, DC: Government Printing Office, 2010).

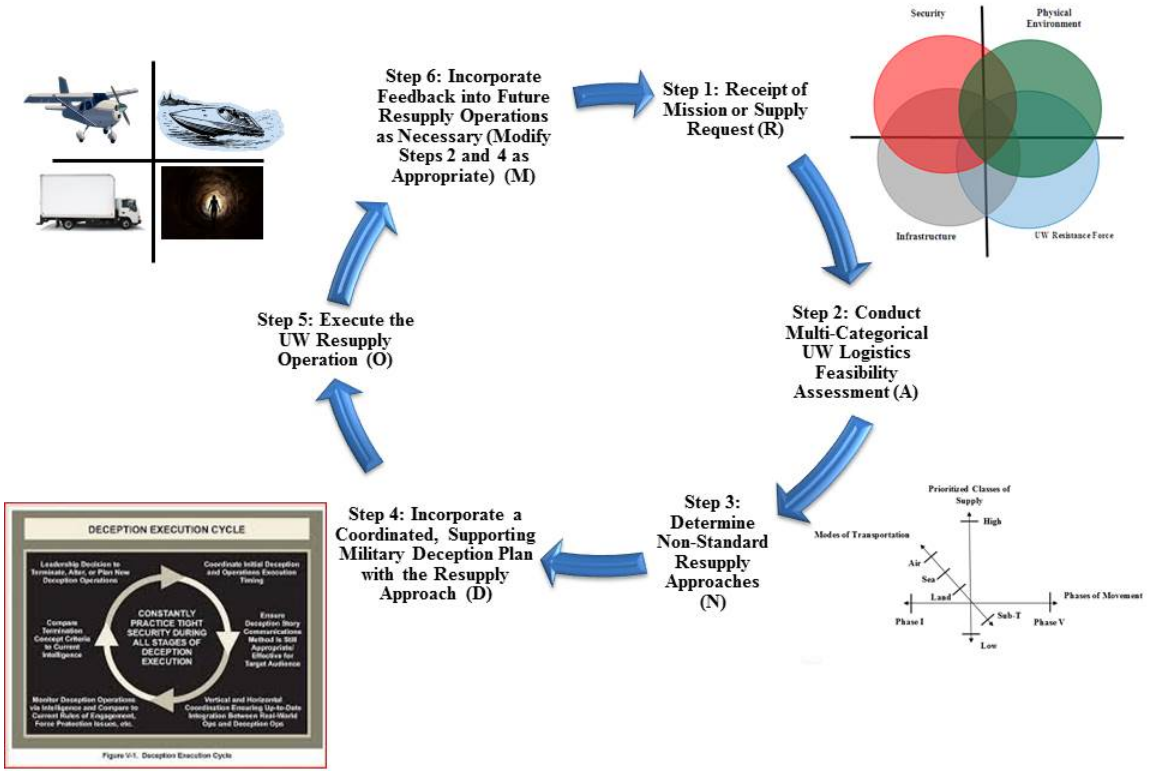

Figure 1. The UW Logistics Planning and Execution Cycle (RANDOM)

A Multi-Categorical UW Logistics Feasibility Assessment

This thesis introduces a multi-categorical UW logistics feasibility assessment tool. This tool (Step II of the UW planning and execution cycle) provides a framework for intelligence analysts and logisticians to assess a UWOA for its logistical resupply feasibility. The tool focuses on four categorical factors within a UWOA: security, physical environment (geographic and climate), infrastructure, and the UW resistance force. This feasibility assessment leads to the categorization of the UWOA, and assists in determining what additional non-standard mechanisms need to be developed to meet any logistical resupply shortfalls. Figure 2 visually depicts the multi-categorical UW logistics feasibility assessment tool.

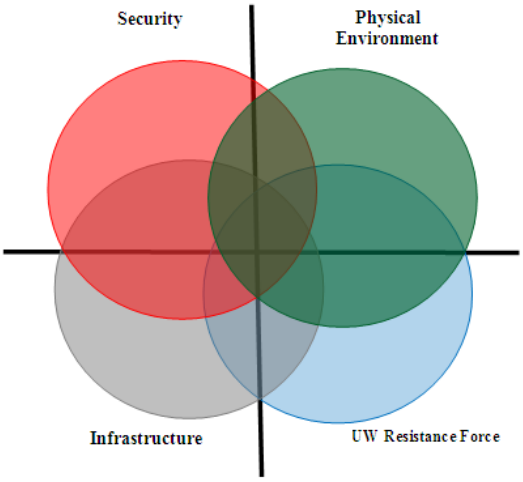

Figure 2. A Multi-Categorical UW Logistics Feasibility Assessment Tool

Non-Standard Resupply Approaches

Next, this thesis frames non-standard resupply through a three-dimensional model based upon the multi-categorical UW logistics feasibility assessment. The three-dimensional model organizes non-standard approaches along three axes: modes of transportation, prioritized classes of resupply, and phases of movement to a UWOA. These axes are then operationalized into a UW logistics synchronization matrix, which utilizes different modes of transportation to transfer prioritized resupply materiel through the various phases of movement during a UW resupply operation. The synchronization matrix provides an approach to conduct UW logistical resupply in the future, given proper authorizations. Figures 3 and 4 visually depict the three-dimensional framing model and UW synchronization matrix.

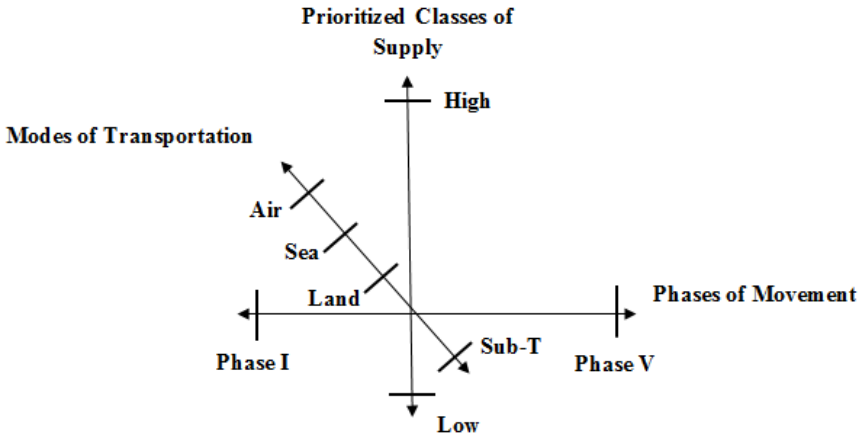

Figure 3. A Three-Dimensional Approach to Non-Standard UW Resupply

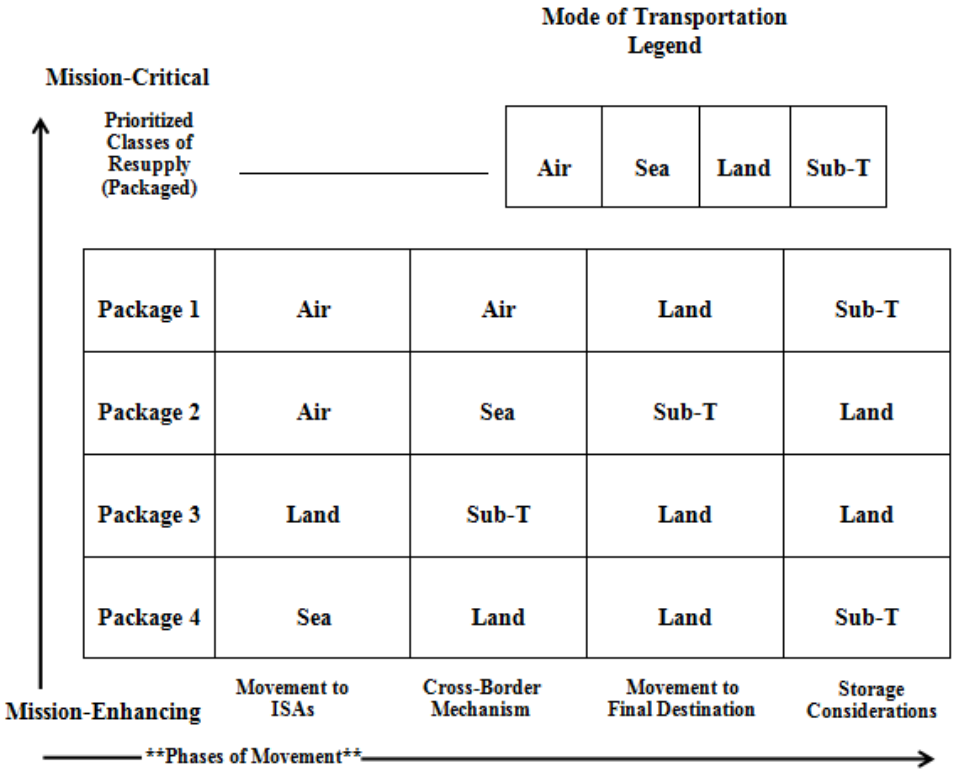

Figure 4. A UW Logistics Synchronization Matrix

This thesis then explores various modes of transportation, including air, sea (both surface and subsurface), land, and subterranean. Next, it discusses resupply materiel considerations by class of supply, ranging from mission critical to mission enhancing.

This analysis occurs from the perspective of conducting unconventional warfare activities prior to Phase Six, Employment, during a UW campaign. UW considerations are discussed for each class of supply, and unique financing approaches are explored. Finally, this information is combined with phases of movement to a UWOA. Concealment techniques, movement to intermediate staging areas, cross-border transportation mechanisms, movement to final destination, and storage of materiel are examined. Multiple unique, non-standard examples, gathered through personal interviews with government officials and civilians previously involved in illicit activities, are combined with additional references to illustrate the use of non-standard approaches to move materiel.

Utilizing Military Deception to Support UW Logistics

Next, this thesis explores the use of military deception to facilitate the movement of logistical resupply through non-standard mechanisms to a UWOA. Historically, it illustrates the importance of utilizing military deception to support military campaigns and underlying military deception principles. Next, it describes how the synchronization of a coordinated military deception plan, utilizing existing joint doctrine (JP 3-13.4)[3] through the deception execution cycle, would enable networked, non-standard UW resupply operations to confuse enemies attempting interdiction.

Recommendations

This thesis concludes with a summary of its findings, and offers the following recommendations:

- Utilize portions of this thesis into current doctrinal manuals, regarding UW logistics. This document could be a handbook for UW campaign planners and logisticians or attached as an appendix to existing doctrine, such as *FM 3-05.130: Army Special Operations Forces Unconventional Warfare* or *TC 18-01: Special Forces Unconventional Warfare.*

- A UW logistics coordination cell should be established within United States Special Operations Command (USSOCOM) to supervise, coordinate, and synchronize non-standard logistics across the command.

[3] Joint Chiefs of Staff, *Military Deception* (JP 3-13.4) (Washington, DC: Government Printing Office, 2006), V-3.

This cell should also liaise with other governmental organizations in order to avoid duplication of effort.

- Education regarding UW logistics is lacking. A training course should be established for UW logisticians and support personnel to understand the complexities and difficulties surrounding the use of networked, non-standard approaches to resupply.

- Networked, non-standard approaches must be established prior to the conduct of an unconventional warfare campaign. These compartmented networks take time to establish. A study to determine what entity should act as the leading proponent to advance UW logistics is warranted. USASOC's organizational restructuring effort under its 2014 Office of Special Warfare concept offers potential synergies to facilitate this mission.

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I. INTRODUCTION

A. BACKGROUND

> Amateurs talk about tactics, but professionals study logistics.—Gen. Robert Barrow, USMC[1]

> The study that systematically addresses guerrilla sustainment in the same way that Van Creveld and a few others have treated military logistics for regular armies has yet to be written, but the topic has gained far more urgency with the end of the Cold War and the new importance and even centrality of irregular warfare.—Graham Turbiville, Ph.D., senior analyst with the Foreign Military Studies Office[2]

The United States military engaged in two extended conflicts after 2001, each with unique challenges, including the sustainment of combat operations. Military logisticians have learned numerous lessons during these conflicts and have achieved a high degree of competence in sustaining operations undertaken thousands of miles from resource bases. However, this competence largely involved sustaining conventional battles, overt in nature, with well-established lines of communication. The U.S. military's ability to logistically sustain small covert or clandestine teams of special operations forces (SOF), operating in denied territory (enabling a resistance movement to coerce, disrupt or overthrow an occupying power) remains questionable.

Lieutenant General (LTG) Charles Cleveland's guidance in "Army Special Operations Forces 2022" (ARSOF 2022), appearing in *Special Warfare* magazine, states that the United States Army Special Operations Command (USASOC) will possess "unparalleled special warfare capabilities that will enable them [USASOC Soldiers] to support long-duration special operations campaigns in the most sensitive, austere and denied environments."[3] An assessment of existing logistical means to support this

1 International Military Forums, "Logistics Quotes," accessed October 28, 2014, http://www.military-quotes.com/forum/logistics-quotes-t511.html

2 Graham H. Turbiville, Jr., *Logistic Support and Insurgency: Guerrilla Sustainment and Applied Lessons of Soviet Insurgent Warfare: Why It Should Still Be Studied* (Hurlburt Field, FL: Joint Special Operations University, 2005), 2.

3 Charles Cleveland, "ARSOF 2022," *Special Warfare* 26, no. 2 (2013, April–June), 30.

guidance is both relevant and necessary as the United States military transitions out of a decade of conflict.

The purpose of this thesis is twofold: to assess the United States armed forces' ability to sustain an unconventional warfare (UW) campaign logistically, anywhere in the world in the period 2015–2025, and to propose a general model derived from this study to conduct future UW logistical resupply utilizing networked, non-standard approaches. This model facilitates a UW logistics planning and execution cycle that may be employed in today's operating environment.

By U.S. Army doctrine, sustainment includes logistics, personnel services, and health support.[4] This thesis focuses principally on logistics, and less on personnel services or health service support. After summarizing existing military doctrine and a survey of historical case studies, the thesis explores civilian, paramilitary, and criminal organizations' mechanisms and techniques of moving supplies and contraband in order to support their organizations. Therefore, the scope is not purely military, but it also encompasses non-military, logistical support tactics, techniques, and procedures (TTPs) enabling global operations.

The United States armed forces may possess the capability to sustain an unconventional warfare campaign in certain countries during the period 2015–2025; however, it may lack this capability in others. An assessment of this capability is prudent, and efforts to address shortcomings require immediate attention.

B. METHODOLOGY

Official documents cite possible difficulties in logistical support of UW, but do not consider that such support may be impossible in some unconventional warfare operations areas (UWOAs).[5] This thesis first summarizes existing military doctrine surrounding both conventional and UW logistics in order to identify any doctrinal gaps.

4 Department of the Army, *Sustainment* (ADP 4-0) (Washington, DC: Government Printing Office, 2012), 1.

5 Department of the Army, *Special Forces Unconventional Warfare* (TC 18-01) (Washington, DC: Government Printing Office, 2010), 44.

Next, it conducts a historical survey of case studies on logistical support to UW campaigns, insurgencies, and terrorist organizations, ranging from World War II to the present, to identify historic resupply trends.

Although additional cases could have been studied, the examples that follow were chosen for several specific reasons. First, the examined cases all describe logistical resupply methods in which the United States was either involved as an actor, sponsored a third party's actions, or where there exists a direct threat from a U.S. adversary in today's operating environment (e.g., Al Qaeda and Hezbollah). If U.S. actions in one theater of a conflict were studied, additional U.S. actions in another theater (e.g., Office of Strategic Services Jedburg operations in the Eastern Front during World War II) were not. To further narrow the study's scope, this thesis did not focus on numerous other insurgencies and conflicts without U.S. involvement. Additionally, foreign cases often lacked detailed accounts available in English.

Second, the sample cases conduct a historical survey of UW logistics, and provide a range of military involvement varying from high-intensity conflicts in World War II and Korea, to the clandestine Central Intelligence Agency (CIA)-sponsored insurgency in Tibet. Critics may argue that the cases differ greatly and therefore cannot be qualitatively be compared. Although the conflicts differ greatly and span a 70-year period, the resupply methods utilized during all these cases remained similar. The variety of cases strengthens the validity of the historic trends previously described, given the ambiguous operating environment predicted in ARSOF 2022.

This thesis explores logistical sustainment of a future UW campaign in unpredictable conditions, with respect to both external threats and internal budgetary requirements. It is prudent to study a wide range of historic conflicts. Given the 70-year timeframe and the restriction of only examining cases where the United States acted, sponsored, or was/is threatened by an adversary, an insufficient amount of cases exist to conduct a thorough quantitative analysis. Instead, this thesis will propose a model based on qualitative analysis.

Following the assessment of the United States armed forces' ability to sustain a (UW) campaign logistically anywhere in the world in the period 2015–2025, this thesis proposes a general model to conduct future UW logistical resupply operations. First, a multi-categorical "UW feasibility assessment" tool is proposed. Inputs from this tool, designed to understand the future UWOA, facilitate implementing a networked, non-standard approach to conduct UW resupply in the future. Furthermore, a coordinated military deception plan provides additional inputs to confuse the enemy as the non-standard approach is executed. This model, combining inputs from a thorough environmental understanding of the UWOA, together with an integrated, supporting military deception plan, create an output: a networked, non-standard approach utilized to conduct UW logistical resupply in the future.

C. EXISTING DOCTRINE

Army Doctrine Publication (ADP) 4-0, *Sustainment*, explains how the elements of sustainment—logistics, personnel services, and health service support—enable the Army's operations on the battlefield.[6] ADP 4-0 identifies and describes the eight principles of logistics, highlighting the necessity of joint interdependence and the strategic context of where support assets are based.[7] ADP 4-0 concludes by establishing the framework for sustaining decisive action. It states that factors such as operational reach, freedom of action, and endurance challenge the Army's ability to achieve decisive action.[8]

Army Doctrine Reference Publication (ADRP) 4-0, *Sustainment*, further details the concepts established in ADP 4-0.[9] ADRP 4-0 describes the bridge from sustainment at the strategic level to the operational level, highlighting the increasingly joint and multinational nature of logistics. It broadly examines moving resources from the United States' strategic base (mostly the U.S. mainland) by utilizing joint, interagency, and

6 Department of the Army, ADP 4-0, iii.

7 Department of the Army, ADP 4-0, 3–7.

8 Department of the Army, ADP 4-0, 10–15.

9 Department of the Army, *Sustainment* (ADRP 4-0) (Washington, DC: Government Printing Office, 2012), iii.

international means. Of importance, ADRP 4-0 highlights a whole-of-government approach to support a theater of operations. Initiatives such as bilateral or multinational diplomatic agreements facilitate access for U.S. forces to ports, terminals, airfields, and bases to support future military contingency operations.[10] This whole-of-government approach and international cooperation, coupled with joint assets delivering resources, is applicable to UW logistics.

ADRP 4-0 explores the factors of operational reach, freedom of action, and endurance that apply to UW logistics. Operational reach refers to a unit's ability to successfully operate given its distance from resources and the duration of operations. A unit reaches its culminating point at the limit of its operational reach.[11] This concept applies to general purpose forces (GPF) as well as SOF, and is scalable. ADRP 4-0 discusses opening a theater, including receipt of resources from a strategic base, movement of these resources to intermediate staging bases, and then to forward operating bases.[12] It outlines a hub-and-spoke model to move supplies rapidly across great distances. UW planners need to understand the implied time considerations of providing certain types of resources. Additionally, the publication highlights the importance of "sustainment preparation of the operational environment."[13] This preparation focuses on infrastructure, the physical environment, and resources in the operational environment that effect friendly forces. Essentially, it provides SOF logisticians a starting point to begin their analysis in the context of a UW campaign.[14]

Army Special Operations Forces Unconventional Warfare (Field Manual [FM] 3-05.130) provides a detailed, unclassified framework for understanding and executing UW.[15] Chapter 8 of FM 3-05.130 provides doctrine concerning logistics in a UW environment. The first two sentences highlight the inherent difficulties involved in

10 Department of the Army, ADRP 4-0, 2-2.

11 Department of the Army, ADRP 4-0, 3-5.

12 Department of the Army, ADRP 4-0, 3-7– 3-10.

13 Department of the Army, ADRP 4-0, 3-13.

14 Department of the Army, ADRP 4-0, 3-13.

15 Department of the Army, *Army Special Operations Forces Unconventional Warfare* (FM 3-05.130) (Washington, DC: Government Printing Office, 2008), iv.

sustaining a campaign. Paragraph 8-22 suggests, "Logistics during UW presents unique challenges for ARSOF units. Careful planning and coordination—both with normal supply channels and other available government agencies—help to diminish these challenges and sustain the force."[16] The chapter continues by stating that the Sustainment Brigade (Special Operations) acts as the "single logistics command element for a JSOTF," but either the Theater Sustainment Command (TSC) or the Expeditionary Sustainment Command (ESC) should relieve it quickly.[17]

FM 3-05.130 stresses the importance of utilizing the auxiliary to its fullest extent to provide sustainment. The manual presents various methods of resupply, both internal and external. Internal resupply methods focus on local procurement of resources through barter, purchase, levy, seizure (confiscation), or battlefield recovery. *FM 3-05.130* only discusses aerial resupply and caches "when properly planned and established" as external resupply methods.[18]

Training Circular (TC) 18-01: Special Forces Unconventional Warfare expands on numerous concepts introduced in *FM 3-05.130*. *TC 18-01* discusses insurgent logistics, highlighting that, as a UW campaign expands, the resistance organization also likely expands beyond its logistical capabilities. At this point, resupply from an external sponsor becomes paramount in order to continue expansion of the resistance. Additionally, *TC 18-01* describes the negative impact methods such as levies (i.e., receipts or IOUs) and confiscation create when utilized to internally supply UW operations. When these methods are employed, the population (the key to the successful execution of any UW campaign) quickly becomes disaffected.[19]

Chapter 3 of *TC 18-01* acknowledges the lack of established lines of communication (LOCs) within an unconventional warfare operations area (UWOA). It emphasizes that external resupply, during the buildup and combat employment phases of a UW campaign, needs to incorporate different locations and utilize various and varying

16 Department of the Army, FM 3-05.130, 100.

17 Department of the Army, FM 3-05.130, 100–101.

18 Department of the Army, FM 3-05.130, 101–102.

19 Department of the Army, TC 18-01, 31–33.

methods.[20] The circular explains that external resupply specifically falls into two categories: accompanying and external. Accompanying resupply moves into the UWOA with a Special Forces Operational Detachment—Alpha (SFOD-A) upon infiltration. External resupply occurs after infiltration in one of three ways: automatic, emergency, or routine.[21] Finally, the manual identifies several delivery means to include aerial, surface ship, or submarine. Once the UWOA develops, the feasibility of resupply via air landing exists.[22]

In the four publications summarized, logistical sustainment methods considered include aerial resupply, battlefield recovery, local procurement, and movement via the auxiliary. Aerial resupply consistently remains the most paramount method cited to logistically sustain UW campaigns. Given the reliance on external resupply by aircraft assets, the conduct of a UW campaign exists in countries with formidable air defense assets is problematic. Second, the need for additional forms of external resupply exist, especially when internal resources lack the capability to sustain a UW campaign, and aerial resupply proves infeasible. Although doctrine calls for utilizing the auxiliary and cache supplies, the supplies still require movement from an external site, perhaps another country, to the UWOA. The requirement exists for a mechanism, likely "non-standard" in nature, to facilitate such movement.

D. HISTORICAL SURVEY

In *Behind the Burma Road: The Story of America's Most Successful Guerrilla Force*, William Peers and Dean Brelis chronicle the story of Detachment 101, a unit of the Office of Strategic Services, operating behind enemy lines in Burma during World War II. Peers and Brelis describe the logistical struggles the unit experienced throughout its inception, initial operations, and then rapid expansion of its resistance organization. Detachment 101 infiltrated and resupplied its members solely by external air during initial operations. Additionally, Detachment 101 lacked indigenous contacts during initial

20 Department of the Army, TC 18-01, 43.

21 Department of the Army, TC 18-01, 44.

22 Department of the Army, TC 18-01, 46.

operations. The unit's initial airdrops resembled "blind drops" since only four Kachins, lacking local knowledge, accompanied the 12 total men in "A" Group.[23] After the Japanese compromised "A" Group behind its lines, the Group split in two. One element received an aerial resupply, but later disappeared, presumed at the time to have been captured or killed. This proved incorrect, as the three men lived off the land, covering over a thousand miles on foot in three months.[24] The other element lived off the land for several weeks as aircraft proved unavailable for resupply.[25] These men foraged from the jungle, eating "wild game, bamboo shoots, berries, and a few grains of wild rice."[26] Overall, two options existed for Detachment 101 during the unit's early operations: live off the land or receive aerial resupply.

As Detachment 101 rapidly expanded its operations, logistical problems abounded as the native resistance force quickly outstripped its internal supply base. Peers and Brelis write, "As our guerrillas became more involved in fire-fights, raids, and ambushes, the supply problem became overwhelming."[27] Much like today's doctrine, Detachment 101 developed both "standard and emergency drops" to streamline logistics. On average, 200 routine resupply bundles and 30 emergency resupply bundles were dropped per day at the height of the UW campaign in Burma.[28]

In *White Tigers: My Secret War in North Korea*, U.S. Army Colonel Ben S. Malcom describes his year-long experience advising Korean partisan efforts during the Korean War in 1952. These partisans disrupted North Korean and Chinese operations on the Korean mainland north of the 38th parallel, from a series of islands located off the west coast of Korea. Then-Lieutenant Malcom describes his experience with the partisans but also discusses other organizations within the secret "Army Unit 8240" and their missions in various locations on the Korean peninsula. Malcom cites the logistical

23 William R. Peers and Dean Brelis, *Behind the Burma Road: The Story of America's Most Successful Guerrilla Force* (Boston: Little, Brown and Company, 1963), 73–77.

24 Peers and Brelis, *Behind the Burma Road*, 94.

25 Peers and Brelis, *Behind the Burma Road*, 89–92.

26 Peers and Brelis, *Behind the Burma Road*, 92.

27 Peers and Brelis, *Behind the Burma Road*, 211.

28 Peers and Brelis, *Behind the Burma Road*, 212–213.

challenges partisans faced, the inefficient Army supply system they depended on to continue operations, and the difficulties the Baker Section experienced conducting operations deep in denied territory. He notes that his leadership expected the guerrillas to live off the land, which proved impossible; even the North Koreans and Chinese who occupied the mainland troubled over "keeping their troops fed and clothed."[29] Koreans who would become partisans fled the mainland during the North's invasion and occupied islands off the west coast of northern Korea, leaving all their possessions behind. The majority of partisans wholly depended upon American shipments of rice, competing among themselves for resources, which arrived by plane every seven to 10 days.[30] Battlefield recovery of oxen, and the oxen's five-mile swim back to "Donkey 4" headquarters in Wollae-do Island, supplemented partisan efforts occasionally.[31] However, aerial resupply sustained the majority of both American and partisan efforts during the UW campaign.

Transitioning between resupply operations and "pilot team" operations, Malcom highlights Baker Section's brave, dangerous, and often futile efforts to establish guerrilla bases deep in denied territory during the Korean War. The first two Baker Section airdrops occurred in 1951 and failed disastrously. Only five of the 24 members who participated in the first parachute drop did not get captured or killed. In the second drop, only eight of 16 survived. The survivors of the second airdrop, unable to make radio contact, evaded the enemy for two weeks, living off the land before passing into friendly lines. Although initial attempts failed, the Baker Section continued operations, performing 17 more missions with partisans only. Nearly 390 partisans and Allied forces participated in 19 airdrops in the Baker Section; 13 returned to friendly lines from the operations. Logistical resupply occurred only once during the 19 operations.[32]

29 Ben S. Malcom, *White Tigers: My Secret War in North Korea* (Washington DC: Brassey's Inc., 1996), 109.

30 Malcom, *White Tigers*, 110–116.

31 Malcom, *White Tigers*, 104.

32 Malcom, *White Tigers*, 133–138.

In "The Utility of Freedom: A Principle Agent Model for UW," Tyler G. Van Horn describes Operation ST CIRCUS, the CIA-sponsored Tibetan insurgency from 1956–1974. For 18 years, Tibetan resistance forces waged guerrilla warfare against the People's Republic of China (PRC). These forces relied on resupply by air. By early 1959, the resistance received an estimated 800,000 pounds of materiel via aerial delivery.[33] The CIA maintained plausible U.S. deniability of the agency's support to the resistance by hiring Polish pilots to fly unmarked aircraft during resupply missions. These pilots equipped resistance members with weapons common to the region, rather than Western armaments.[34] Resupply continued following the Dalai Lama's exile in 1959, and the resistance forces' movement to the Mustang region of Nepal. Here, the *Chushi Gangdruk* (translated "Four Rivers, Six Ranges") continued to receive resupply via aerial means.[35] The United States' commitment to the anti-Communist cause assumed additional risk when American pilots flying C-130As replaced the Polish pilots and their C-118s.[36]

T. L. Bosiljevac's *SEALS: UDT/SEAL Operations in Vietnam* and John L. Plaster's *SOG: The Secret Wars of America's Commandos in Vietnam* both highlight North Vietnam's control of areas in Laos that logistically sustained its insurgency in South Vietnam. This sanctuary provided a buffer to the Communist North while serving as a line of communication and resupply network in what became known as the Ho Chi Minh trail.[37] In the summer of 1959, North Vietnam created the 559th Transportation Group. Members of this unit, armed with captured French weapons and dressed in peasant garb, marched south 10 miles a day while engineers expanded and improved simple footpaths.[38] In contrast to previous U.S.-sponsored insurgencies, the North Vietnamese did not utilize any aerial resupply to sustain its forces logistically in the south.

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33 Tyler G. Van Horn, "The Utility of Freedom: A Principle Agent Model for UW" (master's thesis, Naval Postgraduate School, 2011), 33.

34 Van Horn, "The Utility of Freedom," 37.

35 Van Horn, "The Utility of Freedom," 34–41.

36 Van Horn, "The Utility of Freedom," 45.

37 Tim L. Bosiljevac, *SEALS: UDT/SEAL Operations in Vietnam* (New York: Ivy Books, 1990), 14.

38 John L. Plaster, *SOG: The Secret Wars of America's Commandos in Vietnam (*New York: Simon & Schuster, 1997), 19.

Again, during the Vietnam War, the United States attempted to overcome logistical shortcomings for covert and clandestine operations in denied territory through aerial means. U.S. Army Colonel Francis J. Kelly comments in his *U.S. Army Special Forces 1961–1971*, "U.S. Special Forces in Vietnam required the development of new techniques of resupply in the field … unconventional operations forces, regardless of size, could not carry much more than a five-day supply of food, ammunition, and other necessities."[39] However, in typical fashion, the U.S. largely filled this need by aerial resupply.

Graham H. Turbiville, in his *Joint Special Operations University* article, "Logistic Support and Insurgency: Guerrilla Sustainment and Applied Lessons of Soviet Insurgent Warfare: Why It Should Still Be Studied," argues that Soviet Union planners' understanding of Soviet partisan operations during World War II correlates to the USSR's success in sponsored and supported insurgencies throughout the Cold War.[40] Turbiville analyzes insurgent logistics in four ways: (1) historical case studies of guerrilla logistical support during the Greek Civil War and the insurgency in El Salvador, (2) a broad discussion of sustainment in classic insurgency writing, (3) a detailed logistical and support function analysis of on-going guerrilla and terrorist conflicts, and (4) a discussion of logistic instruction and planning in active insurgent and terrorist groups.[41] Turbiville's summary of Al-Qaeda's four-stage security plan for arms acquisition provides the most application to UW logistics. Stage I focuses on pre-mission activities, to include surveillance detection exercises, appropriate clothing wear, and cover story development. Stage II involves the act of purchasing arms, minimizing time with the seller, and quickly viewing, inspecting, and testing the weapons. Stage III involves tradecraft associated with transporting the arms, including the deployment of observers ahead of the arms transfer, ensuring the vehicles are in proper working order, and closely monitoring time and routes during movement. Stage IV focuses on storage of the weapons. It describes proper site

39 Francis J. Kelly, U.S. Army Special Forces 1961–1971 (CHM Pub 90-23) (U.S. Government Printing Office, 1973), 145.

40 Turbiville, "Logistic Support and Insurgency," 2–3.

41 Turbiville, "Logistic Support and Insurgency," 3–8.

selection, maintaining comprehensive coded and secure records, obtaining alternative storage sites, and maintaining a low profile when visiting the storage site.[42]

In "HIZBULLOGISTICS: The Asymmetrical Application of Logistics in War," J. M. Daniel traces the terrorist group Hezbollah's smuggling operations of illegal materiel, including banned firearms, rockets, and demolitions, from various sources into southern Lebanon. Hezbollah transports such items, primarily weapons, in low quantities via commercial and non-commercial transportation, over land, sea, and air, through countries with porous borders—primarily Lebanon, Iran, and Syria.[43] Of note, Daniel argues that the smuggling situation along the 199-mile land border between Syria and Lebanon creates great challenges to stem the flow of illegal materiel. Additionally, tunnels plague Israeli Defense Forces attempting to secure their country's borders.[44] Following the movement of illegal materiel into a country via smuggling methods, transportation of this materiel continues through undeveloped LOCs. These routes lack adequate infrastructure to transport conventional government forces and supply them during hostilities, but are sufficient to enable insurgent forces' movement of weapons and personnel.[45] Following transportation to staging areas through dispersion, Hezbollah moves its illegal materiel to fixed, concealed locations in various commercial and civilian vehicles, disguised as governmental, commercial, or even humanitarian assets. Often these locations are culturally sensitive sites such as hospitals, schools, and religious structures.[46] Concealment occurs during all stages of the illegal movement, from smuggling to storage. Hezbollah's "non-standard techniques" of logistically sustaining its organization directly relates to logistically sustaining UW campaigns.

UW campaigns inherently require logistical resupply through a variety of internal methods. When these prove infeasible, due to lack of resources or rapid resistance force growth, external resupply becomes crucial, but typically lags behind the rapid growth of

42 Turbiville, "Logistic Support and Insurgency," 7.

43 J. M. Daniel, "HIZBULLOGISTICS: The Asymmetrical Application of Logistics in War" (master's thesis, Navy War College, 2010), 2.

44 Daniel, "HIZBULLOGISTICS," 4.

45 Daniel, "HIZBULLOGISTICS," 6.

46 Daniel, "HIZBULLOGISTICS," 7–8.

the resistance. This lag in resupply degrades the resistance and leads ultimately to either a slower UW campaign or its outright failure. Second, aerial resupply remained the default approach to external resupply during U.S.-supported UW campaigns or sponsored insurgencies during the past 70 years. Although U.S. doctrine allows resupply over land, sea, or air, the majority of actual U.S. operations since 1942 utilize aircraft. Only the U.S.'s adversaries (North Vietnamese use of the Ho Chi Minh Trail, Al-Qaeda arms transport, and Hezbollah's smuggling operations) address moving external resources over land. Finally, the inability to resupply operations conducted deep in denied territory consistently manifests itself throughout history.

E. A GENERAL UW LOGISTICAL RESUPPLY MODEL

No general UW logistical resupply model currently exists. Although standard operating procedures (SOPs) exist to conduct both routine and emergency aerial resupply during a UW campaign, this process may be infeasible given certain adversaries' air defense capabilities. The remaining chapters propose, formulate, and describe a general model to conduct UW resupply. The model was derived from existing doctrine and the previous historical survey of UW campaigns, para-military groups, and terrorist organizations' resupply efforts.

First, inputs from a multi-categorical "UW logistics feasibility assessment" tool produce a non-standard approach to conduct UW resupply operations. This approach can be framed along three axes: modes of transportation, classes of resupply being transported, and phases of movement during the resupply operation. Additionally, a coordinated military deception plan provides inputs to the non-standard approach, supporting the resupply operation during all phases of movement. This deception plan confuses enemy interdiction efforts, enabling the non-standard approach throughout the phases of movement to the UWOA. As the environment changes, feedback from personnel conducting resupply operations, SOF operators on the ground, and the resistance force, ensure refinements to the deception plan and the multi-categorical UW feasibility assessment occur. Figure 1 depicts the general UW logistical resupply model.

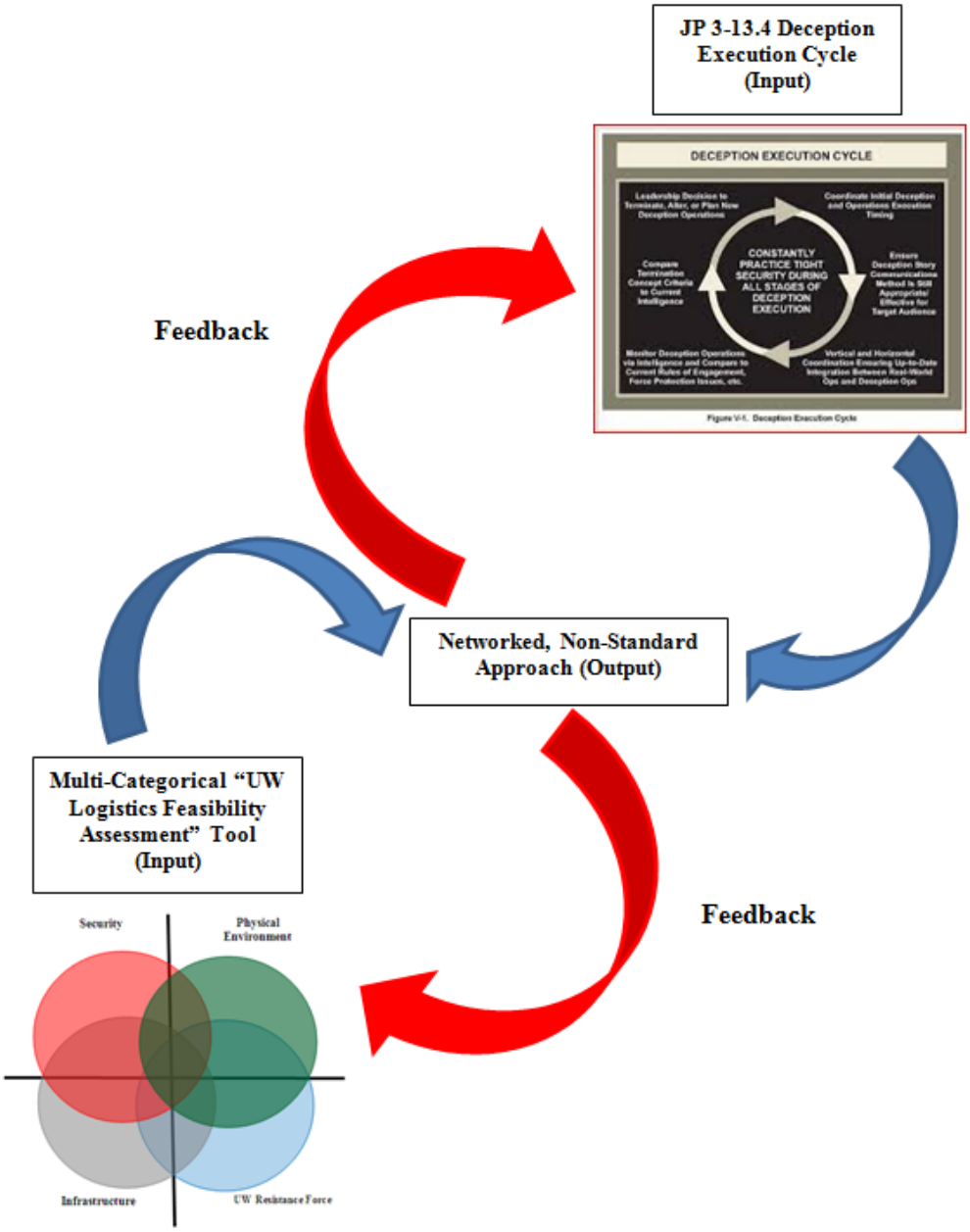

Figure 1. A General UW Logistical Resupply Model[47]

[47] The deception execution cycle located in the upper right-hand corner of the figure is from *Military Deception* (JP 3-13.4). A larger image of the planning and execution cycle is available in Chapter IV of this thesis. Joint Chiefs of Staff, *Military Deception* (JP 3-13.4) (Washington, DC: Government Printing Office, 2006), V-3.

This general model represents the steps within a “UW logistics planning and execution cycle.” Figure 2 illustrates this process utilizing a flow chart. This flow chart illustrates the major decision points and actions involved in conducting non-standard resupply to sustain an unconventional warfare campaign. First, a mission to conduct UW resupply is received. Second, a thorough understanding of the UW environment occurs utilizing the multi-categorical UW logistics assessment tool. Third, an approach to conduct UW resupply is developed. This approach may be more conventional in nature utilizing historical resupply techniques, or it may be non-standard. The UW environment will guide the approach, hence the assessment. Fourth, a coordinated, synchronized military deception plan is developed to shape and support the resupply operation. Fifth, the resupply approach is executed. Sixth, feedback gathered during the execution of the resupply operation provides additional atmospherics that are used to refine the assessment of the UWOA and modify the deception plan if necessary.

It is important to note that the UW logistics planning and execution cycle can be implemented to both transport supplies into a UWOA, or remove them. The steps within this cycle remain the same.

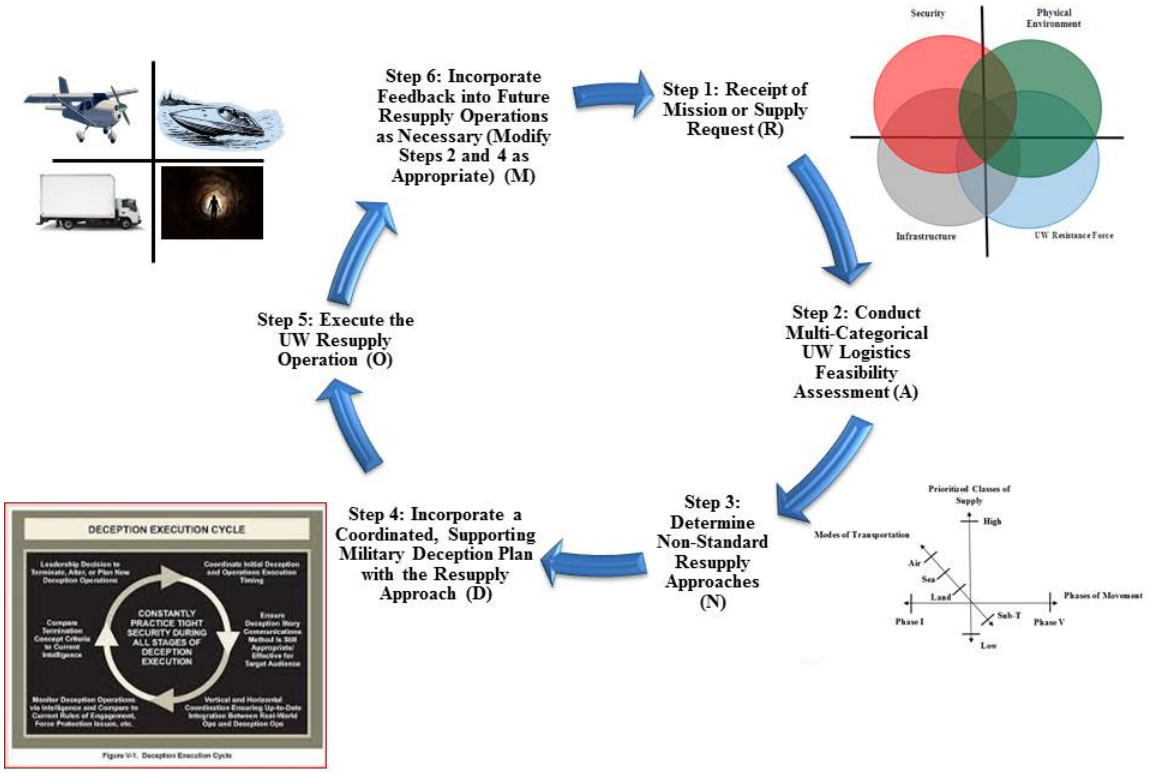

Figure 2. The UW Logistics Planning and Execution Cycle (RANDOM)

F. SUMMARY OF REMAINING CHAPTERS

Chapter II of this thesis introduces a multi-categorical "UW logistics feasibility assessment" tool. This tool provides a framework for intelligence analysts and logisticians to assess a UWOA for its logistical resupply feasibility in four categories. As a general assessment model, it facilitates area experts in determining the degree of logistical feasibility within a potential future UWOA. This feasibility assessment leads to the categorization of the UWOA, and assists in determining what additional non-standard mechanisms need to be developed to meet any logistical resupply shortfalls.

Chapter III frames non-standard resupply through a three-dimensional model based upon the multi-categorical UW logistics feasibility assessment. The three-dimensional model organizes non-standard approaches along three axes: modes of transportation, prioritized classes of resupply, and phases of movement to a UWOA.

These axes are then operationalized into a UW logistics synchronization matrix, which utilizes different modes of transportation to transfer prioritized resupply materiel through the various phases of movement during a UW resupply operation. The synchronization matrix provides an approach to conduct UW logistical resupply in the future, given proper authorizations.

Chapter III then explores various modes of transportation to include air, sea (both surface and subsurface), land, and subterranean. Next, it discusses resupply materiel considerations, by class of supply, ranging from mission critical to mission enhancing. This analysis occurs from the perspective of conducting unconventional warfare activities prior to Phase Six, Employment, during an UW campaign.[48] Military classes of resupply are studied, as well as financing considerations. Finally, this information is combined with phases of movement to a UWOA. Concealment techniques, movement to intermediate staging areas, cross-border transportation mechanisms, movement to final destination, and storage of materiel are examined. Multiple unique, non-standard examples, gathered through personal interviews with government officials and civilians previously involved in illicit activities, are combined with additional references to illustrate the use of non-standard approaches to move contraband.

Chapter IV explores the use of military deception to facilitate the movement of logistical resupply through non-standard mechanisms to a UWOA. Historically, it illustrates the importance of utilizing military deception to support military campaigns and underlying military deception principles. Next, it describes how the inputs of a coordinated military deception plan, utilizing existing joint doctrine through the deception execution cycle, would enable UW resupply operations to confuse enemies attempting interdiction.[49]

Chapter V offers recommendations, a discussion on what entity should act as the leading proponent to advance UW logistics, and potential synergies with USASOC's organizational restructuring effort under its 2014 Office of Special Warfare concept.

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48 Department of the Army, FM 3-05.130, 58.

49 Joint Chiefs of Staff, *Military Deception* (JP 3-13.4) (Washington, DC: Government Printing Office, 2006), V-3.

Given existing doctrine and the above historical survey, United States Special Operations Command (USSOCOM) may possess the capability to sustain a UW campaign in many regions of the world; in other regions, significant obstacles that will require study and creative solutions, exist.

With the creation and employment of a general UW logistical resupply model, Turbiville's concerns that a "systematic study to address guerrilla sustainment" has not been produced will begin to be addressed.[50] This model should greatly aid planners at all levels, and may offer a methodology to overcome the most difficult UW target sets. As LTG Cleveland states in "ARSOF 2022," "the most critical gap in ARSOF special warfare capability exists in the UW mission set; our ability to conduct UW in denied areas for extended periods of time."[51] Without first addressing existing logistical shortfalls in capability and capacity, it will remain difficult to dramatically increase ARSOF's special warfare capability in the period 2015–2025.

50 Turbiville, "Logistic Support and Insurgency," 2.

51 Cleveland, "ARSOF 2022," 13.

II. A MULTI-CATEGORICAL UW LOGISTICS FEASIBILITY ASSESSMENT TOOL

> *The environment dictates not only our actions to combat smuggling, but our adversaries' smuggling TTPs*—U.S. Customs and Border Protection Agency Smuggling Interdiction Group (SIG) Commander[52]

Given the potential doctrinal gaps and historic challenges surrounding UW logistics, it is imperative for UW planners to firmly understand the UWOA. While *TC 18-01*'s Appendix A, "Area Study," looks at many considerations in a UWOA, the study does not emphasize logistical resupply considerations.[53] Given that logistics ultimately determine the outcome of most conflicts, it is prudent to develop a more robust logistical feasibility assessment tool for future UWOAs. The multi-categorical UW logistics feasibility assessment tool provides a framework for intelligence analysts and logisticians to conduct a "deep dive" into logistical resupply considerations of a future UWOA.

The multi-categorical UW logistics feasibility assessment tool focuses on four categorical factors within a UWOA: security, physical (geographic and climate), infrastructure, and the UW resistance force. Each category is analyzed from a logistical resupply perspective, addressing both positive and negative factors. Figure 3 visually depicts the multi-categorical UW logistics feasibility assessment tool.

52 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview by author, April 16, 2014.

53 Department of the Army, TC 18-01, A-1–A-5.

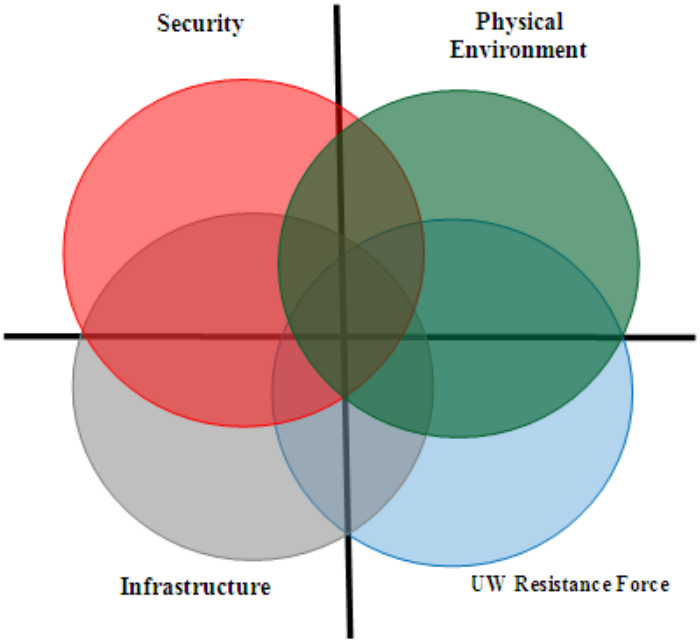

Figure 3. A Multi-Categorical UW Logistics Feasibility Assessment Tool

Each sphere represents a categorical factor directly influencing the United States' ability to logistically resupply a potential UW campaign. Security within the UWOA, physical characteristics of the UWOA, existing infrastructure, and the capacity of the UW resistance force itself are important factors to consider from a logistical resupply standpoint. As the diagram depicts, these factors are not mutually exclusive, but overlap and influence one another. For example, the climate within the UWOA may seasonally affect existing road conditions (infrastructure), ultimately influencing the ability to logistically resupply forces. Additionally, the infrastructure within a UWOA may affect the regime's ability to rapidly deploy its security forces. Each factor will now be explored in more depth.

A. SECURITY FACTORS

Security factors within a UWOA impact the resistance force's and external sponsors' abilities to logistically resupply the campaign. Security factors include: (1) the UWOA's occupation status (e.g., if the UWOA has been occupied by another state or non-state actor); (2) population density within the UWOA; (3) population demographics

(which sections of the population support which side); and (4) regime security force composition, disposition, training [focused on counter insurgency (COIN) and air defense capabilities], and competency.

Whether the UWOA has been occupied by another state or non-state actor will influence a resistance force's ability to procure and receive logistical resupply. During WWII, German occupied territories were difficult to externally resupply due to restrictive Gestapo security practices and the physical presence of German security forces. Conversely, the Viet Cong were able to successfully resupply operations in South Vietnam by circumventing opposing security forces by travelling on the Ho Chi Minh trail. This facilitated logistical resupply through an unoccupied sanctuary.

The population density and demographics within the UWOA affect logistical resupply capability. A less densely populated region typically enhances logistical resupply efforts since there is less potential for compromise (if the population is hostile). If the population is supportive of resistance force efforts, an increased population density may be beneficial to the UW campaign. Increased popular support allows expansion of the resistance force's security apparatuses, additional sources for local procurement of resources, and the ability to expand existing logistical networks.

Finally, the regime's security force capabilities greatly affect UW logistical resupply efforts. The composition and disposition of forces remains a paramount consideration to the resistance force and its ability to maintain an appropriate footprint. Logistical resupply may be more or less difficult based on the security forces' composition and disposition. If a robust air defense capability exists, aerial resupply may prove to be a dangerous or infeasible option. Additionally, the training and competence of security forces is an important consideration when planning and conducting logistical resupply. If the security force maintains a robust COIN capability, is assessed to be highly trained, or has gained COIN experience during past or ongoing campaigns, logistical resupply will be more difficult.

While these four factors are not all inclusive, when properly understood they provide initial situational awareness from a security perspective within the UWOA. This

initial situational awareness facilitates the establishment of new logistical networks or the refinement of existing auxiliary networks to improve resupply within the UWOA.

B. PHYSICAL (GEOGRAPHIC AND CLIMATE) FACTORS

Physical factors significantly impact the resistance force's and external sponsors' abilities to logistically resupply a UW campaign. Physical factors include: (1) the geography/terrain within a UWOA; (2) the availability of resources within the UWOA; and (3) the UWOA's climate. A UWOA's terrain can adversely affect a resistance force's ability to gain, expand, or hold territory. However, a resistance force's logistical efforts can be enhanced by the geography and associated terrain in a UWOA. Rugged terrain may facilitate the establishment of large resistance sanctuaries that external sponsors may leverage through aerial resupply or other technological methods.

Additionally, the geography/terrain may lessen a resistance forces ability to logistically sustain itself through local procurement. Desert climates and arid mountainous regions offer little subsistence for a resistance attempting to sustain itself by living off the land.

Finally, a UWOA's climate remains an important logistical consideration. Since a UW campaign typically takes months, if not years, to establish, develop, and ultimately succeed, all seasonal aspects of the UWOA's climate must be considered. An understanding of seasonally adverse weather (e.g., monsoons, drought, periods of heavy snowfall) must be understood and analyzed from a logistical resupply perspective. Once the restrictions and advantages of seasonal climate changes are identified, a proper resupply approach may be determined.

C. INFRASTRUCTURE FACTORS

Existing infrastructure within the UWOA greatly impacts the ability to logistically resupply a UW campaign. Infrastructure factors include: (1) the amount and condition of roads and trails; (2) the availability and condition of seaports, beach landing sites, and other coastal configurations; (3) the availability and condition of airports, airstrips, helicopter landing sites, and drop zones; (4) storage facilities (warehouses, safe houses,

etc.); and (5) the security and operations protocol surrounding the above infrastructure factors.

The road and trail network within a UWOA affects logistical resupply over land. The condition of these networks remains as important as the amount of roads and trails within the UWOA. An extensive, well-maintained road network provides rapid transportation of logistics provided the resistance force is developed enough to secure these routes. Conversely, an extensive, well-maintained road network provides regime security forces the same benefits (rapid deployment, varying routes to minimize one's pattern of life, etc.). Trail networks may provide additional security to resistance force members attempting resupply, but will also restrict the amount of materiel the resistance can move. There are obvious tradeoffs involving land-based logistical resupply.

The availability and condition of seaports and beach landing sites within a UWOA affect logistical resupply by sea, as do remote coastal coves and inlets. Again, the existence of a developed seaport and the ability of the resistance force to facilitate transportation of materiel through it has tradeoffs. Control of a developed seaport facilitates the transportation of vast amounts of materiel from external sources into the UWOA, directly benefiting either the regime or the resistance. If the regime controls the seaport, logistical resupply for the resistance force will become much more difficult. However, if a resistance force is highly organized and has developed networks within the port itself, some resupply may be feasible by sea, though highly dangerous. The availability of beach landing sites and their condition is another important factor when conducting logistical resupply by sea. The amount of coastline and the coastal population density are important considerations. The geographic terrain of the coast (rocky, coral, sand, etc.) and tides will likely dictate both the time of logistical resupply by sea and the type of landing craft needed.

The availability and condition of airports, airstrips, helicopter landing zones, and drop zones within a UWOA remain important logistical resupply considerations. A developed airport has the same tradeoffs as a developed seaport described above. Again, these tradeoffs must be weighed both from a risk tolerance perspective and the capacity of the resistance force. Similarly, the availability and condition of rural airstrips,

helicopter landing zones, and drop zones within the UWOA will dictate the aerial resupply platform. Population density in these areas remains a paramount consideration when planning any UW logistical resupply operation.

The availability and condition of storage facilities within a UWOA will guide the networked, non-standard approach chosen to conduct resupply. If secure, weather-proof structures exist within a UWOA, materiel storage becomes easier. If such facilities remain sparse, additional time and effort are required to properly weatherize and cache supplies for future use. Additionally, the availability of secure safe houses within a UWOA is paramount to the transport of materiel once inside the UWOA. Operational security must be high and the pattern of life near these facilities must blend with the environment within the UWOA and the population.

D. RESISTANCE FORCE FACTORS

Factors surrounding the resistance force itself influence logistical resupply during a UW campaign. These factors involve the resistance force's capabilities or limitations and include: (1) the status and organization of the resistance force; (2) the resistance force's cross-border reach and international influence; (3) the resistance force's ability to grow and unite various factions of the population in the UWOA; (4) the establishment of any resistance force safe havens/sanctuaries; and (5) the distance from these safe havens/sanctuaries to friendly or neutral areas outside the UWOA.

The status and organization of a resistance force impacts its ability to logistically resupply itself. An undeveloped resistance force, lacking an organized auxiliary and underground, likely possesses limited logistical resupply capability. Without established auxiliary networks with access and placement needed to travel throughout the UWOA, the transportation of materiel is difficult. However, as a resistance force matures, these constraints abate. External sponsor support often is necessary to assess, organize, and grow components of the resistance force through the use of surrogates or SOF personnel.

The resistance force's cross-border reach and international influence will also affect logistical resupply during a UW campaign. If the resistance force gains international support, additional aid and assistance from external sponsors is likely. With

additional external sponsor support, a resistance force's cross-border reach increases. Such international sponsors may utilize diplomatic channels to influence neighboring neutral countries to become more amenable to the transport of non-lethal or lethal aid through their territories.

The establishment of sanctuaries and safe havens for a resistance force remains a paramount factor in resupplying the resistance. Throughout history, a resistance force operating from a safe haven succeeded in maintaining its lines of communication more often than a resistance force that lacked a sanctuary. Without some sort of safe haven, generally controlled by resistance members or sympathizers, logistical resupply becomes increasing more risky and difficult. The resistance force's proper establishment of "zones of security" (A, B, and C) remains a key component to logistical resupply.[54]

Finally, the physical location of established safe havens and sanctuaries affects the ability of a resistance force to be logistical resupplied. If long distances to neutral or friendly actors outside the UWOA exist, transportation of materiel cross-border into the UWOA is more difficult. Additionally, if sanctuaries are not adjacent to these external support areas (e.g., the regime has surrounded the UWOA), logistical resupply mechanisms become increasingly limited.

E. LOGISTICALLY DEFINING A CATEGORY 1, 2, AND 3 UWOA

Potential UWOAs now are able to be categorized into one of three categories, ranging the spectrum of UW logistical feasibility. A "Category One" UWOA is an area where the United States armed forces will possess the capability to logistically sustain a UW campaign during 2015–2025 utilizing existing doctrine and historic capabilities. A "Category Two" UWOA is an area where the United States armed forces may possess the

[54] "Zone A" security is immediate security surrounding the guerrilla base. This primarily is defined by the base's defensive positions. "Zone B" security extends from the guerrilla base 5, 10, or even 15 miles. This zone of security relies heavily on networks of individuals sympathetic to the resistance force's cause. These networks provide intelligence and early warning of the movement and actions of the regime's security forces. "Zone C" security involves networks of individuals sympathetic to the resistance force's cause who have access and placement within the regime's political, military, or other government functions. These networks provide significant early warning surrounding the regime's counterinsurgency actions to the resistance force. United States Army John F. Kennedy Special Warfare Center and School "Robin Sage" cadre member, personal communication, February 2009.

capability to logistically sustain a UW campaign during 2015-2025 utilizing existing doctrine and historic capabilities, but likely needs to develop additional non-standard approaches to decrease the risk to mission. A “Category Three” UWOA is an area where the United States armed forces will not possess the capability to logistically sustain a UW campaign during 2015–2025 utilizing existing doctrine and historic capabilities.

Arguably, unique and creative networked resupply mechanisms need to be established over the next decade to facilitate logistical sustainment of a future UW campaign if that campaign is to succeed. Essentially, the number of networked, non-standard approaches needed to substitute existing UW logistics doctrine varies from none within a category one UWOA, to many in a category three UWOA.

The multi-categorical UW feasibility assessment tool and subsequent categorization of a UWOA are not intended to be quantifiable. Too many additional factors exist which can influence the logistical sustainment of a UW campaign. The tool and ensuing categorization are intended to provide subject matter experts, intelligence analysts, and logisticians with a framework to build upon in order to assist their commanders in making a decision. They should clarify the problem set for a decision maker, and when combined with a leader’s sound judgment, enable better decisions.

III. NON-STANDARD RESUPPLY APPROACHES

A. A THREE-DIMENSIONAL APPROACH TO NON-STANDARD RESUPPLY

When exploring non-standard approaches to UW resupply, it is helpful to organize the problem set along several axes. First, there are various modes of transportation available. Second, some classes of resupply are more important than others during a UW campaign. Finally, the actual transportation of supplies (and tradecraft utilized) can be examined through the various phases of movement to the UWOA. A visual representation of these three axes is provided in Figure 4.

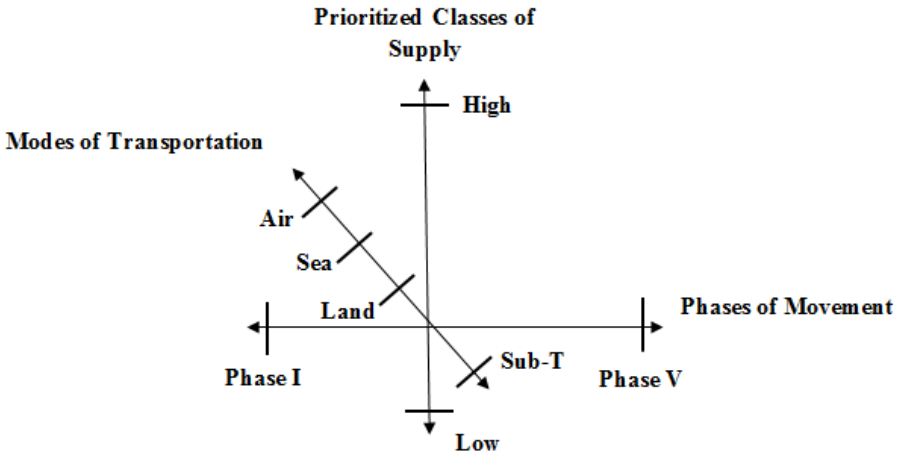

Figure 4. A Three-Dimensional Approach to Non-Standard UW Resupply

In Figure 4, the x-axis models various phases of movement to the UWOA. These include concealment techniques, movement to intermediate staging areas (ISAs), cross-border transportation mechanisms, movement to final destination, and storage considerations. The y-axis examines UW-specific considerations surrounding classes of military supply. The z-axis represents various modes of transportation. These include air, sea (both surface and sub-surface methods), land, and subterranean movement of

supplies. This framing of the non-standard approach can be operationalized through a UW logistics synchronization matrix.

B. A UW LOGISTICS SYNCHRONIZATION MATRIX

After discussing the various considerations associated with the three axes of a non-standard unconventional warfare resupply approach, leaders and UW planners may create a UW logistics synchronization matrix to enable the UW logistics planning and execution cycle. Figure 5 illustrates an example of this matrix.

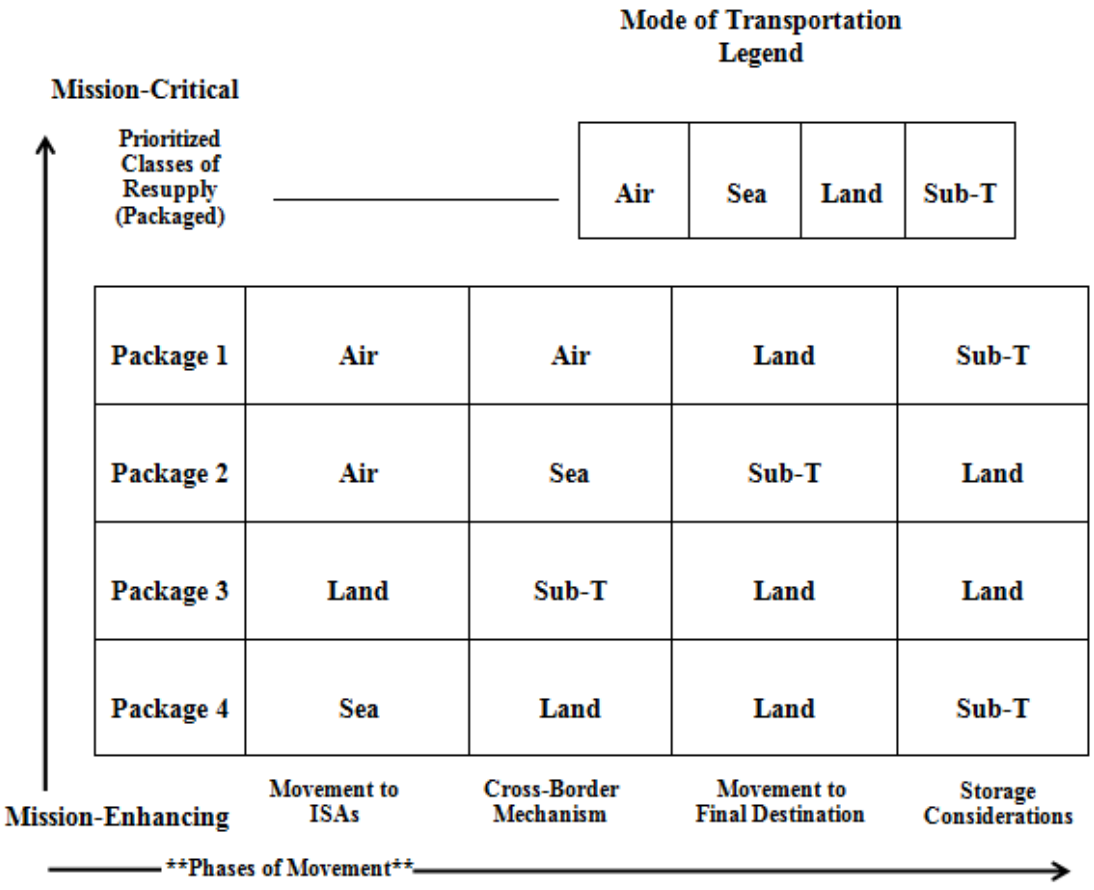

Figure 5. A UW Logistics Synchronization Matrix

** Phase I of Movement (Concealment Devices) is not depicted in Figure 5. Prior to movement, a unique, environmentally-astatic concealment technique will be required to facilitate movement to the UWOA.

The synchronization matrix above depicts the phases of movement to a UWOA on the x-axis (minus pre-mission concealment device preparation) and prioritized classes of supply (in the form of packages to be transported) on the y-axis. The various modes of transportation illustrate the movement of prioritized resupply materiel to the UWOA through the phases of movement. In the above (hypothetical) situation, Package 1 (consisting of the most mission-critical materiel) is moved from its point of origin to a ISA via air. This may be accomplished utilizing conventional or non-standard means. Next, it moves cross-border into the UWOA by air, again either employing conventional or non-standard means to transport the package appropriately given the situational understanding of the UWOA gained during multi-categorical UW feasibility assessment. Once inside the UWOA, movement to the package's final destination occurs via land transport, and the materiel is stored utilizing a subterranean cache until auxiliary members or SOF personnel recover the supplies.

Likewise, Package 2 moves from its point of origin to a ISA via air. A sea-based cross-border mechanism is utilized to transport the supplies into the UWOA. It then continues movement through a subterranean tunnel prior to reaching its final destination in a land-based warehouse.

The above synchronization matrix enables UW planners to succinctly formulate a detailed logistical resupply plan utilizing both conventional and non-standard approaches. These approaches are networked together utilizing compartmented mechanisms. When combined with a supporting deception plan, the prioritized resupply operations decrease risk to mission and interdiction by the enemy. Depending upon conditions on the ground, increased risk to mission (e.g., speed of transport and the overtness of the mode of transportation) may be deemed necessary by leaders attempting resupply. However, having the foresight to create networked, compartmented approaches to logistically resupply friendly elements prior to crises is challenging, but remains the preferred

solution. The remainder of this chapter will examine the sub-components of each axis in more detail, providing real-world examples of various non-standard approaches to move materiel.

C. MODES OF TRANSPORTATION (WITH EXAMPLES)

The four main modes of transportation utilized to logistically resupply military operations are air, sea (both surface and sub-surface methods), land, and subterranean. Each has unique considerations and various available resupply platforms. The purpose of this section is not to discuss "conventional resupply" platforms such as standard military aircraft, ships, and vehicles. These conventional platforms are well known, and military personnel have become highly trained in using them for resupply following prolonged military operations after 9/11.

Rather, less discussed platforms ranging the spectrum from "low visibility" to "clandestine" are discussed. A 2013 RAND Arroyo Center study on "non-standard logistics" identified this spectrum as including: overt, low-visibility, clandestine, commercial, interagency, and dormant structures.[58] These platforms (minus overt, conventional assets) and examples of their use are highlighted throughout the remainder of this chapter. While not all-encompassing, the identification and analysis of each platform's UW logistical resupply considerations provides SOF planners and leaders with valuable information to be built upon, adapted to the mission, and enhanced. Additionally, various platforms (and modes of transportation) may be combined during different phases of movement to decrease one's footprint while conducting resupply.

1. Air

Short takeoff and landing (STOL) aircraft such as the Casa 212, CV-7/C-8A Buffalo, UV-18A Twin Otter, and the C-23 Sherpa resemble civilian aircraft to a greater degree than conventional military air assets. These aircraft decrease one's footprint when sustaining a UW campaign. These platforms' capabilities include both the ability to land on short, unimproved surfaces, or conduct bundle resupply. Bundle resupply can be

58 Boyer et al., *Non-Standard Logistics Support for Unconventional Warfare*, 7. This document is classified Secret//NOFORN. (This information is unclassified).

accomplished utilizing a ramp or a door depending upon mission considerations. The use of these platforms to conduct aerial resupply remains a viable option to parties desiring a decreased operational footprint. Payload capacities remain restrictive, but such platforms during early phases of a UW campaign remain an attractive option due to the decreased military footprint associated with operation.

Transitioning to more covert or clandestine aerial resupply, third-party contracted, civilian and commercial platforms provide a greater degree of camouflage during sensitive missions, albeit the heightened risk to mission if compromised. Contracting through surrogate enterprises remains a timeless concept. Three examples of surrogate aerial resupply are explored below: one associated within military training, one with nefarious entrepreneurship, and one with illicit smuggling operations.

First, members of the United States Army Asymmetric Warfare Group (AWG) routinely received logistical resupply in austere conditions from local nation contractors during recent advisory missions. Multiple examples of commercially contracted resupply occurred in both remote portions of the Middle East and western African nations during 2014 as AWG advised and assessed host-nation counterparts during the implementation of the "Regionally Aligned Brigades" concept.[59] While this example is not completely synonymous with UW operations, surrogate (witting or unwitting) logistical resupply from a local or regional contractor remains a viable option to sustain or supplement an UW campaign.

Second, during a personal interview with a former marijuana dealer, the transportation of contraband across the United States utilizing commercial enterprises was explored. The anonymous individual utilized FedEx to commercially ship several pounds of marijuana from the Midwest to California. While highly risky, the individual mitigated the risk of apprehension through the use of a Post Office box under a fake title. However, the possibility of loss of product and the underlying cost associated with such an action remained high.[60]

59 Members of Asymmetric Warfare Group, interview by author, August 26, 2014.

60 Former marijuana dealer, interview by author, August 5, 2014.

Commercial shipping of illicit products remains prevalent in the U.S. In July 2014, a San Francisco grand jury indicted FedEx on drug-trafficking charges. The ongoing trial claims the company knowingly allowed illegal Internet pharmacies to ship prescription drugs to customers.[61] The application of commercial shipping to UW resupply is feasible, but perhaps not overly practical. Obvious weight and customs constraints exist if attempting to logistically resupply an UW campaign utilizing a third-party, surrogate-based organization through commercial carriers. During the early phases of a UW campaign, commercial delivery is more practical than during later phases. In later phases, a growing resistance force may quickly outstrip the amount of resupply available through commercial carriers. Additionally, proper authorities remain a hurdle associated with such resupply techniques, not to mention the risk of compromise associated with such actions.

Finally, an individual with the United States Department of Homeland Security (DHS), Customs and Border Protection Agency's (SIG) unit based in the San Diego sector described "several incidents involving ultralights," that conducted "cross-border marijuana drops of several hundred pounds" prior to returning south. None of these drops were interdicted by DHS prior to the operators' return to Mexico, even with the United States' highly sophisticated technological means.[62] Successful cross-border incursions into a country of the U.S.'s stature remain frightening, but the methods utilized and their applicability to logistically sustaining a UW campaign are important.

Additionally, the *California Border Alliance Group Drug Market Analysis 2008* conducted by the National Drug Intelligence Center (NDIC) and members of the High Intensity Drug Trafficking Agency (HIDTA) program stated,

> Drug traffickers transport drug shipments as air freight through the San Diego International Airport and the McClellan-Palomar Airport in Carlsbad, California, or by couriers aboard passenger flights. Low-flying private aircraft use numerous privately owned 'soft surface' runways in

61 Donna Leinwand Leger, "FedEx Charged with Trafficking Drugs for Web Pharmacies," *USA Today*, July 18, 2014, http://www.usatoday.com/story/money/2014/07/17/fedex-charged-with-trafficking-drugs-for-web-pharmacies/12808643/.

62 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview by author, April 16, 2014.

> San Diego and Imperial Counties as they attempt to avoid radar detection while smuggling drugs into the region.[63]

Several low-visibility military and civilian aerial resupply platforms were discussed above. Increasing technological improvements facilitate the transportation of supplies through the air. Next, this section explores several technical military and commercial methods to conduct non-standard aerial resupply in the future that are applicable to sustaining a UW campaign.

Additional methods of aerial resupply exist, including Joint Precision Airdrop System (JPADS) and the use of drones in the future. JPADS

> integrates a parachute decelerator, an autonomous guidance unit, and a load container or pallet to create a system that can accurately deliver critical supplies with great precision along a predetermined glide and flight path. The system is being developed in two weight classes: 2,000 pounds and 10,000 pounds.[64]

Capable of dropping bundles from 24,500 feet mean sea level (MSL) with a minimum standoff of eight kilometers, JPADS offers an option to logistically resupply friendly elements up to 25 kilometers within an UWOA while protecting flight crews from multiple anti-aircraft systems.[65]

Additionally, drones continue to evolve, with both illicit trans-national criminal organizations such as the Mexican drug cartels and commercial enterprises such as Amazon touting their capabilities. According to Camilo Mejia Giraldo,

> Since 2012, the Drug Enforcement Agency (DEA) has registered around 150 narco-drones crossing the border, transporting in total approximately

63 National Drug Intelligence Center, *California Border Alliance Group Drug Market Analysis 2008* (Washington, DC: U.S. Justice Department, 2008), http://www.justice.gov/archive/ndic/pubs27/27487/production.htm#Transportation

64 Office of the Director, Strategic Communication (SAAL-ZX), "Joint Precision Airdrop System (JPADS)," in *2013 Army Weapon System's Handbook (*Washington, DC: United States Army, 2012), 188.

65 "Joint Precision Airdrop System (JPADS)," 188.

two tons of cocaine and other drugs. This amounts to an average of roughly 13 kilos per load."[66]

According to Mike Snider, Amazon recently sought deferral approval to test its "Amazon Prime Air drone delivery system" domestically. While payload capacities remain limited, the ingenuity associated with conducting logistical resupply via a third-party, commercial entity remains enticing when attempting to maintain a limited or clandestine military footprint.[67]

Several unique non-standard aerial approaches to logistically resupply a UW campaign were explored. Next, this chapter will explore non-standard approaches related to the sea, discussing both surface and sub-surface methods.

2. Sea

Multiple logistical resupply approaches exist by sea, utilizing either surface craft or sub-surface methods. As mentioned in Chapter I, submarines may be utilized to transport men, weapons, and equipment to a UWOA.[68] In an interview with a U.S. Navy Submarine Force lieutenant, the capabilities of utilizing submarines to support an unconventional warfare mission were discussed. The lieutenant described the conversion of four "Ohio Class" subsurface guided missile nuclear powered (SSGNs) submarines designed to add flexibility to counter the military's evolving threats. These SSGNs were converted to allow two of the 24 missile tubes to transport men, weapons, and equipment from the sea to land. The tubes incorporate "lock-out chambers" to transport troops and equipment from the submarine to the surface. One tube can accommodate approximately 10 operators per lockout cycle, allowing the movement of larger groups through multiple

66 Camilo Mejia Giraldo, "Mexico's Cartels Building Custom-Made Narco Drones: DEA," In Sight Crime, July 11, 2014, http://www.insightcrime.org/news-briefs/mexico-s-cartels-building-custom-made-narco-drones-dea?highlight=WyJtZXhpY28iLCJtZXhpY28ncyIsIm1leGljbyciLCInbWV4aWNvIiwiJ21leGljbydzIiwiZHJ1ZyIsImRydWcncyIsIidkcnVnIiwiY2FydGVsIiwiY2FydGVsJ3MiLCJjYXJ0ZWwnIiwiJ2NhcnRlbCIsImRyb25lIiwidXNlIiwibWV4aWNvIGRydWciLCJtZXhpY28gZHJ1ZyBjYXJ0ZWwiLCJkcnVnIGNhcnRlbCIsImRyb25lIHVzZSJd.

67 Mike Snider, "Amazon Looks to Gain Liftoff for Drone Delivery Testing," *USA Today*, August 17, 2014, http://www.usatoday.com/story/tech/2014/08/17/amazon-drone-offensive/13966157/.

68 Department of the Army, TC 18-01, 46.

cycles.[69] The second tube is designed to facilitate the movement of materiel. This tube allows for storage and access to sensitive items, weapons, ammunition, and additional materiel necessary to complete a covert or clandestine operation. General Dynamics corroborates these statements in its February 2006 *Electric Boat News* publication. In the publication, it states these ships are capable of "transporting materiel necessary to sustain 102 Special Operations Forces (SOF) personnel for short durations or 66 SOF personnel for sustained operations."[70]

In the future, "Block IV Virginia class" fast attack submarines likely will replace the existing "Ohio-class" submarines' flexible response capability. The Department of the Navy's future acquisition could increase the amount of tubes available to conduct operations involving the transportation of men and supplies from the sea. The goal is to build 20 Block IV Virginia class submarines, each with four convertible tubes. Practically, it is not likely all four tubes would be utilized for transportation and storage given the tradeoff necessary between supplies and weaponry. However, if deemed necessary, four tubes per submarine could be converted to transport men, weapons, and equipment.[71]

Outside the military, drug cartels continue to evolve smuggling techniques that remain applicable to UW logistics. In 2010, Ecuadorian authorities seized a submarine capable of transoceanic smuggling voyages. The 33-meter submarine's capabilities included accommodations for six, periscopes for detection of interdiction efforts, air conditioning, and a payload capacity large enough to smuggle 10 tons of cocaine.[72] Submarines remain a perfectly viable, low-visibility method of transporting personnel and materiel into a UWOA.

Additionally, the use of semi-submersible vessels continues to grow as narco-traffickers conduct global smuggling operations. Since their appearance in the late 1990s,

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69 U.S. Navy Submarine Force Lieutenant, interview by author, September 16, 2014.

70"USS Ohio Returns to Service as Navy's First SSGN," *Electric Boat News*, February 2006, http://web.archive.org/web/20090731060602/http://www.gdeb.com/news/ebnews/ebnews0206.pdf, 1.

71 U.S. Navy Submarine Force Lieutenant, interview. September 16, 2014.

72 Craig Stevens, "Yayo Submarine: Life and Death on a Cocaine-Smuggling Submersible," High Times, October 21, 2013, http://www.huffingtonpost.com/high-times/cocaine-submarine_b_4136885.html.

semi-submersible vessels dominate the drug smuggling business as the preferred method of transportation.[73] Reportedly, Colombian drug cartels possess at least 40 semi-submersible vessels and the Mexican drug cartels possess even more.[74] Nearly impossible to detect with radar, these vessels have a range of nearly 2,000 miles and a payload capacity of several tons. Aerial detection remains the only viable form of countering such vessels.[75] The use of relatively low-cost, low-visibility, semi-submersible vessels network to resupply operations within a UWOA utilizing surrogates remains a viable option to SOF leaders given proper authorities.

Economical surface craft, crude in nature, but effective in delivering supplies, continue to be leveraged daily by trans-national criminal organizations (TCOs) to transport contraband. Mexican drug cartels continue to flood the supply side of the illicit drug-trade market through compartmented networks of individuals. Given proper authorizations, the military could establish compartmented networks to conduct resupply operations in a manner similarly being utilized by TCOs. In an interview with a United States Customs and Border Protection Officer (CBPO), the officer described the use of "panga boats" (the term panga comes the East African broad, heavy knife that resembles the boat's hull) as the most prevalent method of illegally transporting both humans and drugs from Mexico to southern California. [76] The seven-year CBPO veteran (with responsibilities including inspection of containers and vessels at both the Los Angeles and Long Beach Sea Ports and the protection of the coast of California spanning from Oceanside to Ventura) explained the boats are loaded with additional fuel inside their hauls and sent north, landing in less populated areas along the California coast (Malibu, Ranchos Palos Verdes, and Ventura areas). The cartels utilize a supply based system to flood the U.S. with drugs (understanding some will be confiscated), and pay "cutouts" (typically poor Mexican workers) a small sum to move the contraband to a specific

73 Stevens, "Yayo Submarine: Life and Death on a Cocaine-Smuggling Submersible."

74 Stevens, "Yayo Submarine: Life and Death on a Cocaine-Smuggling Submersible."

75 Stevens, "Yayo Submarine: Life and Death on a Cocaine-Smuggling Submersible."

76 United States Custom and Border Protection Officer, interview by author, April 14, 2014; *Dictionary.com*, s.v. "Panga boat" accessed October 28, 2014, http://dictionary.reference.com/browse/panga.

location where they meet a second "cutout" within the cartel's network. Mexican cartel "scouts" conduct surveillance of potential landing sites to ensure there is no government or law enforcement presence, then signal the panga boats to land or abort.[77] According to the officer, approximately 45 panga boats were intercepted last year, resulting in the arrest and confiscation of around 200 individuals and moderate amounts of cocaine. However, the officer readily admitted this represents only a fraction of the number of vessels moving contraband to the U.S.[78] The application of these methods of transportation during a UW campaign remains both feasible and practical when conducting networked, non-standard approaches to logistically sustain operations.

Additionally, the officer described several unique, non-standard approaches foreign entities recently began utilizing to transport illegal aliens and contraband through the Los Angeles and Long Beach ports. First, 47-49 percent of all U.S. cargo moves through the Los Angeles and Long Beach ports. Of the 35,000 containers offloaded daily, less than one percent of the containers are x-rayed.[79] The reason only one percent of containers are x-rayed is because the U.S. has a three-day food supply and slowing commerce to search all containers would lead to a national crisis if the supply chain was interrupted. The few containers screened are not randomly selected; instead, specific shipping companies with poor track records, known to originate from specific areas of the world are selected.[80] This indicates shipping contraband with a reputable, unwitting company would greatly increase one's chances of success when moving humans, illegal goods, or applicable UW related materiel trans-nationally.

One new trend of surface-based sea movement described by the DHS representative involved the transportation of illegal aliens via car transport containers. These shipping vessels provide more habitable spaces given their open nature since they move vehicles. After the vehicles are loaded, illegal aliens board the vessel and are free to move among the vehicles or even in the vehicles. Reportedly, the vehicles remain

77 United States Custom and Border Protection Officer, interview, April 14, 2014.

78 United States Custom and Border Protection Officer, interview, April 14, 2014.

79 United States Custom and Border Protection Officer, interview, April 14, 2014.

80 United States Custom and Border Protection Officer, interview, April 14, 2014.

unlocked during transport. Upon arriving at port, the aliens typically remain in a vehicle until being off-loaded to "Terminal Island" where they move off the car carriers and into various ethnic enclaves in the greater Los Angeles area. This typically occurs when the shipping crew is unwitting to the aliens' presence. Sometimes the illegal aliens are caught during the sea voyage by the crew and reported to a CBPO. Hardly, if ever, have the illegal aliens been identified at the LA port of entry by customs officials.[81]

Another example of trans-national smuggling of humans and drugs originating from South America into U.S. ports of entry includes the use of refrigerated containers. In 2013, one container was confiscated with a large amount of cocaine concealed within the coolant system of the container. Upon arrival, the "Longshoremen" (a unionized organization at the port complex) off-load the containers and facilitate movement of the refrigerated containers to an area where they are inspected for maintenance prior to their movement to final destination. Within the organization, corruption is high. Cases of Longshoremen serving up to five years in prison and returning to their previous jobs are common. Additionally, examples of union members breaking container seals during transport to Terminal Island remain common occurrences. This facilitates a third-party member, acting under the guise of picking up the container at night to transport it to its final destination, to enter Terminal Island and transport a "rip-off load" (a duffle bag or smaller container holding drugs or other contraband that is concealed within the larger container filled with legitimate goods). Since the seal has been broken by the Longshoreman, the third-party member (typically compartmentalized from other members of the network through the use of "cutouts") can quickly pick up the contraband and leave the legitimate goods for movement to their final destination.[82]

The use of the sea, both through surface and sub-surface methods, remains a viable option to logistically sustain forces conducting a UW campaign. Chronicled above, recent, applicable, non-standard approaches to move materiel by sea were described. Their applicability to networked, non-standard approaches of logistically resupplying a UW campaign is strong, and can be instructive.

81 United States Custom and Border Protection Officer, interview, April 14, 2014.

82 United States Custom and Border Protection Officer, interview, April 14, 2014.

3. Land

Transportation of goods by land, through illicit, military, or commercial means, remains a timeless necessity to supply materiel where demand exists. This section explores the movement of illegal goods over land (and the tradecraft utilized by criminal networks) to ensure delivery. First, resupply via conventional methods of military convoy or third-party contracted services similar to resupply operations in Iraq or Afghanistan are not discussed. These methods are well known, overt in nature, and not conducive to a UW environment. Rather, the utilization of networks to transport illegal aliens and drugs both cross-border and within the United States is explored. The use of pack animals to conduct resupply operations and civilian vehicles to transport narcotics through the United States are explored. The methods and tradecraft involved in such transportation mechanisms provide valuable insight to UW logisticians and are applicable in future UW campaigns given proper authorities.

First, pack animals commonly are utilized to transport both illicit and legitimate trade goods across land. Harnessing these animals' abilities remains a time-honored practice throughout both military and smuggling history. As a U.S. Customs Service and Border Patrol member from Tucson, Arizona described,

> Each horse carries anywhere from 300 to 400 pounds of marijuana over 70-80 miles of rough terrain between Mexico and the Tucson sector on the Arizona side of the U.S. border.[83]

The military applications of utilizing pack animals to sustain a UW campaign are easily recognized.

In 2012, members of the Horse Detachment, Regimental Support Squadron, 11th Armored Cavalry Regiment began conducting scenarios at the National Training Center in Fort Irwin, California to simulate cross-border incursions utilizing pack animals.[84]

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83 Pat Raia, "Plight of Drug-Trade Horses Described," The HORSE," July 2, 2010, http://tuesdayshorse.wordpress.com/tag/drug-smuggling/page/2/.

84 Anthony J. Lecours, "U.S. Horse Detachment Teaches Smuggling Operations at NTC," May 4, 2012, http://www.army.mil/article/78982/U_S_Horse_Detachment_teaches_smuggling_operations_at_NTC.

These animals' capabilities to move materiel remain applicable to the sustainment of a UW campaign. As noted in the article by Lecours,

> smugglers have utilized native animals to climb up and down the mountains on the border in places that is (sic) difficult for military personnel to patrol. In some areas the air is too thin for helicopters and the ground is too steep and rocky for military vehicles, making it only accessible by foot or mule.[85]

Pack animals remain a unique option to conduct non-standard resupply for a UW campaign given the proper environment.

Blending with the environment in any UW campaign is important. If a proper pattern of life (POL) is established, movement of materiel through networks over land to support the campaign can occur. The use of networked, non-standard approaches and tradecraft to move materiel is constantly being refined. A personal interview with a previously convicted marijuana trafficker explored these non-standard approaches and tradecraft involved in the illicit transport of marijuana within the United States. The individual (who shall remain anonymous) described the movement of over a dozen pounds of marijuana from California to the Midwest. First, the drugs were packaged for both visual and scent concealment, utilizing various methods covered later in this chapter in the "concealment device" section. Next, the two transporters devised an elaborate "cover story" to provide a layer of plausible deniability if stopped by law enforcement personnel. A car was rented and additional luggage (in the form of business casual clothing) outfitted the rental vehicle in plain sight. The individuals drove 10 hours a day (during daylight only), obeying all traffic laws. If pulled over, both would claim they were traveling to attend a business interview in a nearby city. Both individuals dressed in appropriate business attire to add realism to the cover story. Essentially, the transportation of illicit materiel cross-country occurred with a supporting deception plan over the course of four days. The individuals considered the use of a "rabbit" (a vehicle driving several miles in front of the transport vehicle intended to identify random checkpoints and the presence of law enforcement) to provide early warning during the

85 Lecours, "U.S. Horse Detachment Teaches Smuggling Operations at NTC."

movement of the contraband. However, they did not utilize a rabbit in order to decrease expenses and the complexity of the operation.[86] The use of similar tradecraft may be incorporated into non-standard mechanisms intended to sustain a UW campaign via land.

The use of pack animals, civilian vehicles, and tradecraft to deceive interdiction efforts over land remain a core component of non-standard approaches to transport materiel (illicit or legitimate. The 2008 NDIC/HIDTA *Drug Network Assessment* claims most illicit drugs are transported from Mexico to California via land. It continues,

> The vast border area presents innumerable remote crossing points that traffickers exploit to smuggle illicit drugs, primarily marijuana, into the country from Mexico. These areas are easily breached by smugglers on foot, in private vehicles, or in all-terrain vehicles (ATVs)--particularly the mountainous areas in eastern San Diego County and the desert and sand dune areas in Imperial County.[87]

Additional networked non-standard approaches of transporting materiel via land will be later described in this chapter to illustrate potential synergies between nefarious transportation methods of illicit materiel and the sustainment of a UW campaign.

4. Subterranean

Utilizing subterranean mechanisms to transport men, weapons, and equipment to support criminal enterprises and conflict is a growing trend in the twenty-first century. These mechanisms are also applicable to the logistical sustainment of a UW campaign. Whether located along the United States' southern border or used by terrorist organizations such as Hamas in the Middle East, subterranean transport of humans and materiel continues to become more common. Testimony by Executive Associate Director James A. Dinkins (a member of the Immigration and Customs Enforcement) before the Senate Caucus on International Narcotics Control, *Illegal Tunnels on the Southwest Border*, illustrates this growing non-standard trend,

> The use of clandestine cross-border tunnels represents a unique tactic that is being used by transnational criminal organizations. These groups continue to invest in techniques to circumvent border security and have

86 Former marijuana dealer, interview, August 5, 2014.

87 NDIC, *California Border Alliance Group Drug Market Analysis 2008*.

> demonstrated enduring and creative, evolving capabilities to construct and use underground passageways to transport narcotics, people, and other dangerous and contraband into the continental United States. [88]

Dinkins stated the first illicit tunnel discovery occurred in 1990 and since then (1990–2011), 154 (cross-border) tunnel attempts were discovered, with all but one occurring along the southwestern border region.[89]

Subterranean efforts continue to grow in sophistication. Dinkins described one sophisticated tunnel discovered in San Diego, California on November 25, 2010 by agents on the U.S. Immigration and Customs Enforcement (ICE)-led Border Enforcement Security Task Force (BEST) Tunnel Task Force (TTF). During his testimony he stated,

> The tunnel traveled 2,200 feet at a depth of 90 feet and included shoring, electricity, ventilation, and a rail system to assist in ferrying contraband. The entrance was concealed under a hydraulic steel door in the kitchen of a Tijuana, Mexico residence. The tunnel exited into a warehouse near the Otay Mesa port of entry in California. It is estimated this tunnel took more than a year to construct at a cost of more than $1 million.[90]

Dinkins' testimony was further corroborated during a personal interview conducted with a U.S. Customs and Border Protection Agency officer working in the SIG department at the San Diego sector's Special Operations Group. The source (who will remain anonymous due to sensitivities involved in ongoing operations) stated in the month prior to our interview three expansive warehouse-to-warehouse tunnels were discovered in the San Diego area. Drug cartels, with an unlimited supply of labor (in the form of unemployed Mexicans) and money purchase both labor and expertise from foreign engineers (especially German engineers) to conduct tunnel construction. [91] As indicated as recently as the spring of 2014, these expansive tunnels continue to grow in

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88 *Illegal Tunnels on the Southwest Border: Hearing Before the Senate Caucus on International Narcotics Control, United States Senate*, 112th Cong., 1 (2011) (statement of Executive Associate Director James A. Dinkens, Immigration and Customs Enforcement), http://www.dhs.gov/news/2011/06/15/testimony-executive-associate-director-james-dinkins-immigration-and-customs.

89 Dinkens, *Illegal Tunnels on the Southwest Border*.

90 Dinkens, *Illegal Tunnels on the Southwest Border*.

91 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

both quantity and ingenuity to transport money, drugs, and members of the cartels' networks between Mexico and the United States.

Moving to the Middle East, Hamas' extensive subterranean network recently dominated the headlines of major news networks. Hamas' subterranean networks continue to function, even though the Israeli Defense Forces hit them hard during Operation Protective Edge (the 2014 military operation to locate and destroy Hamas' subterranean networks). *Al Jazeera* stated Hamas likely has over 500 tunnels. One tunnel discovered in 2013 spanned 1.5 miles, was 66 feet deep, and cost approximately of $10 million to construct.[92] Additionally, the Al Qassam Brigades (Hamas' armed wing), created areas within the tunnels to allow its fighters to sustain themselves for up to one week.[93] According to *The Guardian*, Hamas utilizes subterranean networks for three purposes: smuggling, defensive structures for command and control and weapons storage, and offensive tunnels to launch cross-border attacks into Israel.[94] Each tunnel costs millions of dollars to construct and may take up to three years to complete because the use of technology is avoided to decrease Hamas' footprint. Instead, Hamas utilizes rudimentary construction techniques such as manual labor to complete the subterranean networks.[95]

Subterranean methods provide multiple benefits to those attempting to transport individuals and materiel clandestinely, but limitations also exist. The benefits of subterranean transport include the difficulties of technological-savvy authorities to expose and interdict the movement of personnel and materiel. The Drug Enforcement Agency commented on its organization's inability to locate subterranean activities stating,

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92 Ben Piven, "Gaza's Underground: A Vast Tunnel Network that Empowers Hamas," *Al Jazeera*, July 23, 2014, http://america.aljazeera.com/articles/2014/7/23/gaza-undergroundhamastunnels.html.

93 Piven, "Gaza's Underground: A Vast Tunnel Network that Empowers Hamas."

94 Harriet Sherwood, "Inside the Tunnels Hamas Built: Israel's Struggle Against New Tactic in Gaza War," *The Guardian*, August 2, 2014, http://www.theguardian.com/world/2014/aug/02/tunnels-hamas-israel-struggle-gaza-war.

95 Sherwood, "Inside the Tunnels Hamas Built: Israel's Struggle Against New Tactic in Gaza War."

> Despite the discovery of an increasing number of tunnels along the U.S.-Mexico border in California, detecting deep tunnels is difficult for law enforcement officials. Ground-penetrating radar, along with surface sensors, is not effective if the tunnel is located several feet below the surface. However, such radar is effective in discovering tunnels that are just below surface level.[96]

While subterranean benefits exist, limitations also constrain the development and implementation of underground transport. Most importantly, robust subterranean tunnels require time and engineering expertise. Expensive in nature and time-consuming, subterranean structures may require multiple months or even years to construct. Additionally, the expertise of engineers remains a costly alternative to other methods of transport. Subterranean approaches to conduct UW logistical resupply may be less feasible given a time-constrained UW environment and budgetary constraints. These mechanisms require foresight and funding to be effective; however, if utilized such approaches will likely be highly effective.

D. PRIORITIZED RESUPPLY MATERIEL CONSIDERATIONS (BY CLASS)

In the early phases of an unconventional warfare campaign, some classes of military supply are more important than others. The following section of this thesis explores the delineation between mission-critical classes of resupply and mission-enhancing classes of resupply. First, it is important to review the military classes of supply. Figures 6 and 7 depict these classes to provide a common frame of reference for the remainder of this section.

96 NDIC, *California Border Alliance Group Drug Market Analysis 2008*.

Classes, Subclasses of Supply, and Common-User Logistics Suitability

Class	Symbols	Subclass	Common-User Logistics (CUL) Capability
I. Subsistence: Food		A - Nonperishable dehydrated subsistence that requires organized dining facilities C - Combat rations includes meals, ready to eat (MREs) that require no organized dining facility; used in combat and in-flight environments. Includes gratuitous health and welfare items R - Refrigerated subsistence S - Non-refrigerated subsistence (less other subclasses) W- Water	Fully suited to CUL
II. General Support Items: Clothing, individual equipment, tentage, organizational tool sets and tool kits, hand tools, material, administrative, and housekeeping supplies		A - Air B - Ground support material E - General supplies F - Clothing and textiles G - Electronics M - Weapons T - Industrial supplies (e.g., bearings, block and tackle, cable, chain, wire, rope, screws, bolts, studs, steel rods, plates, and bars)	Limited CUL suitability
III. Petroleum, Oils, Lubricants (POL): Petroleum (including packaged items), fuels, lubricants, hydraulic and insulating oils, preservatives, liquids and compressed gasses, coolants, deicing, and antifreeze compounds, plus components and additives of such products, including coal		A - Air W- Ground (surface) P - Packaged POL	Excellent CUL candidate (with some limitations)
IV. Construction/Barrier: Materials that support fortification, obstacle and barrier construction, and construction material for base development and general engineering		A - Construction B - Barrier materials	Fully suited for CUL
V. Ammunition: Ammunition of all types (including chemical, radiological, and special weapons), bombs, explosives, mines, fuses, detonators, pyrotechnics, missiles, rockets, propellants, and other associated items		A - Air W - Ground	Limited, primarily to small arms, selected larger munitions

Figure 6. Military Classes of Supply (from JP 4-0)[97]

[97] Joint Chiefs of Staff, *Joint Logistics* (JP 4-0) (Washington, DC: Government Printing Office, 2013), II-5.

Classes, Subclasses of Supply, and Common-User Logistics Suitability (Cont'd)

Class	Symbols	Subclass	Common-User Logistics (CUL) Capability
VI. Personal Demand Items: Nonmilitary sales items		A - Personal demand items not packaged as ration supplement sundry packs (RSSP) M- Personal and official letter and packaged mail. Does not include items in other classes such as spare parts P - RSSP	Fully suited for CUL
VII. Major End-Items: A final combination of end-products ready for intended use; e.g., launchers, tanks, racks, adapters, pylons, mobile machine shops, and administrative and tracked vehicles		A - Air B - Ground support material (includes power generators, fire-fighting, and mapping equipment) D - Administrative and general purpose vehicles (commercial vehicles used in administrative motor pools) G - Electronics J - Tanks, racks, adapters, and pylons (US Air Force only) K - Tactical and special purpose vehicles (includes trucks, truck-tractors, trailers, semi-trailers, etc.) L - Missiles M - Weapons N - Special weapons X - Aircraft engines	Not suitable for CUL
VIII. Medical Material/ Medical Repair		A - Medical material (including repair parts special to medical items) B - Blood and fluids	Fully suited for CUL
IX. Repair Parts (less medical special repair parts): All repair parts and components, including kits, assemblies, material power generators sub-assemblies (repairable and nonrepairable) required for all equipment; dry batteries		A - Air B - Ground support material, power generators, and bridging, fire-fighting, and mapping equipment D - Administrative vehicles (vehicles used in radio administrative motor pools) G - Electronics K - Tactical vehicles (including trucks, truck-tractors, trailers, semi-trailers, etc.) L - Missiles M- Weapons N - Special weapons T - Industrial supplies (e.g., bearings, block and tackle, cable, chain, wire, rope, screws, bolts, studs, steel rods, plates, and bars) X - Aircraft engines	Not suitable for CUL except for common items; requires special coordination to ensure proper support
X. (code as zero '0'): Material to support military programs, not included in classes I through IX		None	Fully suited for CUL

Figure 7. Military Classes of Supply (continued) (from JP 4-0)[98]

While the UW environment ultimately dictates the difference between mission-critical and mission-enhancing resupply (based upon reported ground conditions) the following generalizations serve as a good "rule of thumb" for military logisticians and UW campaign planners. The following prioritization of military classes of resupply during a UW campaign represent the author's assessment only; they do not represent the United States armed forces' official position.

[98] Chairman of the Joint Chiefs of Staff, JP 4-0, II-6.

1. Mission-Critical Classes of Resupply

Class I (subsistence), Class III (petroleum, oils, and lubricants), Class V (ammunition), Class VIII (medical materiel/medial repair), Class IX (repair parts), water, and money likely remain the most mission-critical classes of supply needed to conduct a UW. First, fighters must subsist. While the local economy may provide enough subsistence for a UW campaign, external resupply may be necessary in areas where the environment is hostile, either from a geographical perspective or a security perspective. The UW logistics feasibility assessment tool will facilitate a thorough understanding of the UW environment and assist in determining the criticality of Class I resupply needs. If a military force is unable to sustain itself, its ability to effectively conduct military operations and the force's morale rapidly fade. Class I remains an important class of supply in any military campaign, but non-standard approaches to conduct logistical resupply of this class may be challenging given the size and weight of such materiel.

Second, fuel remains a necessity to conduct operations and transport fighters and materiel. Again, in certain UWOAs, Class III materiel may not be as important (e.g. foot patrols in a densely populated jungle environment or other environments lacking sufficient infrastructure to support mechanized movement). However, ensuring sufficient (and compatible) Class III materiel can be procured to operate in a given UWOA may be challenging if external resupply must occur. As a UW campaign progresses, Class III materiel becomes increasingly important to support the growing campaign. Again, size and bulk considerations of resupplying Class III materiel through non-standard mechanisms must be weighed with the situation on the ground, as well as the tradeoff of not utilizing existing mechanisms to transport other classes of resupply.

Class V (ammunition) materiel remain critical to any military campaign, conventional or unconventional in nature. Without resupply of this materiel, offensive operations may be limited and defensive operations may fail. While weapons themselves are extremely important, having an ample supply of ammunition for the weapons is more important. Without the capacity for the UW resistance force to attack and defeat enemy forces or to defend itself, the campaign will quickly dwindle. Class V materiel is one of the highest priorities of military resupply in any UW campaign.

Class VIII (medical material/medical repair) supplies are also highly desirable in a UW environment. Early in any UW campaign, resistance force members likely will be small in number. Numerous other sympathizers sit on the sidelines of the conflict, determining if their actions are sufficiently warranted given the risk. The ability to treat not only existing resistance force members, but also "fence-sitters" and their families may sway the tide of a growing resistance. For these reasons, Class VIII materiel continues to be of the utmost importance in any UW campaign.

Class IX materiel become increasingly important as a UW campaign progresses. While an initial supply of weapons, communications equipment, and vehicles will sustain the initial stages of any military campaign, maintenance of these items remains inevitable. Certain environments may directly impact the longevity of equipment and the need of Class IX materiel. In certain environments, weapons rust more rapidly and equipment corrodes quicker. The multi-categorical UW feasibility assessment tool helps logisticians plan for such considerations and ultimately results in the determination between what classes of resupply are mission-critical or mission-enhancing. Regardless, routine maintenance in any military conflict requires Class IX materiel. This materiel remains a prioritized class of supply in any UW campaign, especially in campaigns characterized by a resistance force with scarce resources.

Water is the essential element to sustaining life. Without it, life and military operations cease to exist. In the majority of potential future UW environments, water remains an available resource. The utilization of either military water purification systems or streamlined commercially available products such as the LifeStraw© or the Sawyer Squeeze Water Filter© allow an individual Soldier to survive where ample water sources exist. These commercially available systems cost between $20 and $50 respectfully. However, if operating in desert UW environments, external resupply of water may be required. Since a human cannot sustain himself for more than 48 hours without water, it remains a prioritized logistical resupply consideration. Water is mission-critical.

Arguably, money is the most important class of supply in any given military campaign. As Ayn Rand states,

> Money is a tool of exchange, which can't exist unless there are goods produced and men able to produce them. Money is the material shape of the principle that men who wish to deal with one another must deal by trade and give value for value.[99]

In any given military campaign, money remains a paramount concern; it can be utilized to exchange valuable goods depending upon what the environment dictates. Classes of supply, unable to be procured under normal conditions, may be bought. It is important to note money should be provided in local currency, which at times can be challenging. Later in this chapter, non-standard methods of transporting money are examined. With money, sustenance is feasible; without it a military campaign (conventional or unconventional in nature) may fail.

2. Mission-Enhancing Classes of Resupply

Certain classes of military resupply during early stages of a UW campaign are simply mission-enhancing, not mission-critical. First, Class II (general support items) materiel is important. SOF advisors in a UW campaign will arrive equipped to sustain initial operations. Resistance force members likely will employ unique techniques to meet this obligation. As a UW campaign reaches later phases, the need for a standard Class II resupply procedure may emerge. Such anticipated needs are important considerations in planning, but can be mitigated as the campaign progresses given proper reporting. If the campaign progresses rapidly, this mission-enhancing class of supply may become mission-critical.

While Class IV materiel (construction/barrier) are likely not mission-critical, it is mission-enhancing. Utilized to enhance defensive positions of resistance force fighters or to disrupt the movement of the regime force's men and equipment, Class IV materiel remains an important class of supply. Again, given conditions on the ground, this class of supply may be elevated in priority.

Other classes of supply such as Class VI (personal demand items), Class VII (major end-items), and Class X (materiel to support military programs, not included in

99 Ayn Rand, *Atlas Shrugged* (New York: Random House, 1957), 387–388.

Classes I through IX) may be utilized to build rapport with resistance force leaders, or may not be utilized in a UW campaign. Generally, these classes of military supply are less important in a UW scenario than others. The exception to this rule falls within the Class VI category. These items can be utilized to build initial rapport with resistance force leaders. Class VII (major end items) materiel is not very important during the early phases of a UW campaign. If the resistance force increases its capacity for military operations to allow the use of major end items, resupply may be considered. Employing such materiel would be difficult due to additional training on the new equipment prior to its employment in the UWOA. Class X items would be necessary during the final stage of a UW campaign. During transition, additional nonmilitary support enables governmental and military leaders in stabilization efforts.

E. FINANCE CONSIDERATIONS

This section explores various unique mechanisms to finance a UW campaign. Specifically, the movement of money into the UWOA is examined both historically and explores more unique, modern methods. This discussion includes the movement of bulk cash into the UWOA, as well as other non-standard mechanisms such as "hawalas," Bitcoins, and the transfer of money through online gaming or gambling sites.

Bulk cash remains the most prevalent form of financing operations for during a UW campaign. While SOF personnel should strive to ensure this bulk cash is converted into local currency in order to reduce signature, this historically (such as in Afghanistan in 2001) has not always occurred. Typically, upon infiltration, bulk cash will be dispersed evenly among the infiltration element so the money is not in one location. This decreases the risk of losing an entire initial operation's financing given an accident or compromise of members upon infiltration. If bulk cash cannot be converted to local currency prior to infiltration, additional risk to mission must be accepted as the UW force's signature will be increased through the use of foreign currency or through attempts to convert the currency to local denomination once in the UWOA.

In more moderate, developed UWOAs, the use of prepaid stored value cards (PSVCs) may be utilized as a discrete method of transporting funds cross-border.

Recently, the Drug Enforcement Agency commented on such mechanisms stating, "Traffickers purchase PSVCs in the region and openly carry them across the U.S.-Mexico border in California without fear of seizure."[100] These cards provide a unique and simple money laundering method that drug trafficking organizations use to smuggle profits from the United States to Mexico.[101]

Moving to other unique money laundering methods, the use of hawalas to transfer money into a UW environment is possible given the right network. According to the United States Treasury Department, hawalas are alternate or parallel remittance systems. Basically, they facilitate the transfer of money, without actually physically transferring it.[102] It is a system based upon trust.

The hawala works in the following way: an amount of money, say $10,000, needs to be transferred from the United States to Pakistan. Person X, from the U.S. makes contact with a hawala through friends or familial ties. Person X agrees to an exchange rate, gives details of who the money is to be delivered too, and pays a commission to the U.S.-based hawala. The U.S.-based hawala, contacts the Pakistani hawala, gives the details of the transaction and ensures timely delivery (usually within one to two days). The Pakistani hawala fronts the money for Relative Y who is being delivered the $10,000 until the U.S.-based hawala makes payment in the future. Person X transfers the money overseas to Relative Y at a higher exchange rate, with less of a commission, and faster than utilizing traditional banking channels. Judicial oversight and legalities involved in wire transfers over $10,000 are avoided.[103] It is important to note that physical money is never transferred. Future legitimate business transactions between the U.S.-based hawala and the Pakistani-based hawala will rectify the difference through discounted purchases

100 NDIC, *California Border Alliance Group Drug Market Analysis 2008*.

101 NDIC, *California Border Alliance Group Drug Market Analysis 2008*.

102 Patrick M. Jost and Harjit Singh Sandhu, "The Hawala Alternative Remittance System and its Role in Money Laundering," Financial Crimes Enforcement Network, accessed September 17, 2014, http://www.treasury.gov/resource-center/terrorist-illicit-finance/documents/fincen-hawala-rpt.pdf, 5.

103 Jost and Sandhu, "The Hawala Alternative Remittance System and its Role in Money Laundering," 6–8.

or other mechanisms.[104] Hawalas are not necessarily legal or illegal; the reason for the transfer of the money and the amount transferred determine the legality. The uses of hawalas (through a third-party contracted network) remain an applicable, unique mechanism to transfer money into a future UWOA. However, it requires a vetted network since trust is a paramount trait associated with not only hawalas, but a network in general.

Bitcoin is a crypto-currency created in 2009 that allows peer-to-peer monetary transactions with no intermediaries. There are no transaction fees and the transfer of money can occur anonymously.[105] Individuals or businesses may utilize Bitcoins. A non-technical explanation of how Bitcoins work is provided below. This information was pulled directly from a website sponsored by the Bitcoin Foundation.

First, an individual or business installs a "Bitcoin wallet" on one's computer or mobile device. The installation of the Bitcoin wallet creates a "Bitcoin address." This address facilitates the transfer of money between two parties. The Bitcoin wallet is literally a virtual bank account. This wallet is linked to a real bank account, typically through a third-party Bitcoin platform such as Coinbase©. This facilitates the purchase or selling of Bitcoins on the open market and the corresponding transfer of Bitcoins to local currency. A Bitcoin transaction, although able to transfer funds internationally within minutes, takes longer to convert to local currency if utilizing third-party platforms such as Coinbase©. These funds become available in two to four business days after a transaction occurs.[106] In essence, Bitcoin transactions facilitate the transfer of money internationally, while maintaining a high level of security and anonymity. USSOCOM is currently studying Bitcoin to determine if it can be detected, since many U.S. adversaries utilize it to fund operations.[107] Such research could also lead to its use to fund sensitive, clandestine operations such as UW, given proper authorities.

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104 Jost and Sandhu, "The Hawala Alternative Remittance System and its Role in Money Laundering," 8.

105 "What is Bitcoin?," CNN Money, accessed September 18, 2014, http://money.cnn.com/infographic/technology/what-is-bitcoin/.

106 "How Long Does a Sell Take?," Coinbase, accessed September 18, 2014, https://support.coinbase.com/customer/portal/articles/1392026-how-long-does-a-sell-take-.

107 Eamon Javers, "Special Ops Grill Bitcoin for its Terror Fight," CNBC, September 26, 2014, http://www.cnbc.com/id/102033875.

Finally, online gaming and gambling sites can be utilized to transfer funds globally. As Ingo Fiedler states,

> Gambling is as a perfect tool for money laundering due to three reasons: (1) Gambling involves a huge volume of transactions and cash flows which are necessary to disguise money laundering; (2) Gambling does not involve a physical product making it much more complicated to track the flow of money and proof real vs. virtual turnover; (3) Gambling wins are tax free in many jurisdictions.[108]

The simplest way to transfer money is to lose it to another individual, likely through a "heads-up poker" game. If a network has been established (with proper bona fides) the global transfer of currency can quickly occur via many gambling or gaming sites. While legalities exist in much of the U.S. surrounding online gambling sites, other countries do not exhibit legal constraints. Fielder illustrates the laundering of $10,000 Euros (of illicit drug money) into "clean" revenue in his paper through the use of gambling with an account in Germany. Since Germany requires only a 5 percent tax on any gambling winnings, simply breaking even after play results in the transfer of $9,500 Euros of formally illicit money into clean money that can be deposited into any bank.[109] One simply needs to transfer money to another country through a series of deposits or bank wires, move such money to a legitimate gambling account, play and "lose" to a member of one's network located within the UWOA, and have that individual claim his/her "winnings" to fund future operations. Decidedly simple in nature, the above example also requires the establishment of a vetted network to transfer funds into a UWOA and proper authorizations to conduct such activities.

F. PHASES OF MOVEMENT (WITH EXAMPLES)

The following section discusses various phases of movement into a UWOA. These phases include concealment, movement to ISAs, cross-border movement mechanisms, movement to final destination, and storage considerations. Some (but not

108 Ingo Fiedler, "Online Gambling as a Game Changer to Money Laundering?," University of Hamburg, Germany, April 30, 2013, http://www.wiso.uni-hamburg.de/fileadmin/bwl/rechtderwirtschaft/institut/Ingo_Fiedler/Online_Gambling_as_a_Game_Changer_to_Money_Laundering_01.pdf, 3.

109 Fielder, "Online Gambling as a Game Changer to Money Laundering?," 7.

all) phases of movement are applicable to both movement within a UWOA and movement from an external location to the UWOA. For example, when moving supplies from one guerrilla base to another within the UWOA, a cross-border mechanism is likely unnecessary. The phases of movement and real-world examples of each are examined below. The majority of examples exhibit networked, non-standard approaches to move illicit materiel and were gathered from primary source interviews. These approaches have direct application to conducting UW resupply in the future utilizing similar techniques given proper authorizations.

1. Concealment Techniques

Concealment devices remain an age-old mechanism to move men, weapons, equipment, or illicit materiel from one destination to another undetected. Ranging from the "Trojan Horse" to more evolved mechanisms, concealment devices remain a favorite tactic to transport materiel clandestinely. In an interview with a member of the United States Department of Homeland Security (DHS), based in the San Diego sector, various concealment device techniques were discussed. The majority of concealment techniques remain vehicle modifications to move drugs and money (an increasing trend) from Mexico to the U.S. In 2014, few vehicle modifications to enable human trafficking occurred. The majority of concealment devices consist of commercial vehicles with false floors and false compartments built into the trailer section closest to the cab.[110]

Additionally, unique trends to smuggle drugs and money from Mexico to the U.S. continue to evolve. These techniques include the modification of any portion of a vehicle to be used as a concealment device. Examples of such modifications include modified battery compartments and gas tanks. First, the original car battery is removed and replaced with a low powered motorcycle battery with just enough power to start the vehicle once. Then drugs or money are concealed within the additional room in the battery compartment. For gas tanks, part of the tank is utilized for gas, but an additional metal wall is built to house contraband. These are sealed and separated, then filled with

110 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

liquefied methamphetamine. After crossing the border, the liquid methamphetamine is drained into plastic containers where it cools and crystallizes. Almost any portion of vehicle can be modified to move drugs and money.[111]

A sub-section of concealment is camouflage techniques. These techniques are often utilized to move illegal aliens through the nation's busy port of entry, El Centro, between Tijuana and San Diego. "Human camouflage," in the form of fraudulent documents, remains one of the biggest trends. Since border patrol agents only have several seconds to determine a person's identity at a point of entry (POE), fraudulent identification documents (IDs) are often purchased and provided to illegal aliens who resemble the legitimate person in the document. In Mexico, these can be purchase for several hundred dollars. If a person sells the document to an illegal alien, he or she can simply state the ID was lost. A new ID may then be purchased in Mexico for less than $100. Camouflaging drugs and money includes wrapping the contraband in air tight seals, adding various liquids designed to be masking agents, and then repeating the process several times prior to concealing the contraband deep within a vehicle.[112]

The proper concealment and camouflage of any sensitive materiel remains a paramount consideration. The study of recent TTPs in these areas continues to be an important consideration for UW logistical planners, and the evolved techniques are directly applicable to preparing equipment prior to transport into a UW environment.

2. Movement to Intermediate Staging Areas

Once concealment and camouflage occurs, prioritized resupply packages may be moved to ISAs prior to being transported into a UWOA. It is important to consider that the transportation of the supplies may also move from its point of origin directly to its final destination. However, in the below section, techniques to conduct movement to ISAs are described. In Mexico, TCOs utilize compartmented, evolving techniques to move both humans and illicit materiel (drugs and money) to ISAs prior to cross-border

111 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

112 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

transportation.[113] This mostly occurs by vehicle over land. Over the past several years, the number of illegal aliens per car has significantly decreased from five to eight personnel to one or two personnel. These personnel are transported from initial pickup sites through an existing network of safe houses. Sometimes, multiple curriers are utilized to compartment the transportation mechanism. These individuals only have knowledge of their specific sections of the transportation network. Detailed instructions are given to allow the transport of personnel and illicit materiel from one point to the next. Bona fides, travel times, and final destination instructions are provided to facilitate the movement.[114]

In Mexico, guides are used to move personnel to sites near the border prior to cross-border movement. Since this movement occurs in Mexico, the environment ranges from permissive to semi-permissive at worst. The majority of these operations still utilize compartmented networks and rudimentary structures for safe houses. Once at the safe house, instructions are given to the personnel to remain in place until another member of the network conducts a link-up and continues movement north with the group. Often after link-up, the new guide issues detailed instructions concerning the movement, but does not accompany the illegal aliens cross-border.[115] Mexican TCOs constantly adapt techniques to avoid U.S. customs interdiction efforts. An increasing trend of compartmentalized networks occurred after 2004.[116]

3. Cross-Border Transportation Mechanisms

Multiple cross-border mechanisms exist, ranging all modes of transportation to include ground, sea, air, and subterranean mechanisms. Mexican TCOs predominantly utilize ground travel mechanisms to transport personnel and illicit materiel through the El

113 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

114 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

115 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

116 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

Centro POE due to the urban nature of the environment in San Diego. To the east (in the high desert of Arizona) Mexican guides instruct illegal aliens how to cross the U.S./Mexican border from one safe site to another. In both cases, compartmentalization remains a growing trend. The use of cutouts maintains operational security and plausible deniability for all involved.[117]

Via sea, Mexican TCOs primarily utilize panga boats (previously described) to transport humans, drugs, and money cross-border to the United States in southern California. The majority of other surface and sub-surface mechanisms (submarines, semi-submersible submarines, etc.) have not recently been identified by customs agents patrolling the southern California coastline.[118]

Via air, the use of ultralights to transport materiel (previously described) occurred. All flights occurred at night, dropped marijuana, and then returned south to Mexico without being interdicted.[119] The use of other aerial methods was not discussed in interviews with U.S. officials, but multiple aerial options to transport materiel cross-border were previously covered earlier in the chapter.

Perhaps the most interesting trend in the southern California border region is the increased use of subterranean cross-border mechanisms. Previously discussed, Mexican TCOs increasingly utilize subterranean methods of transportation. A thorough assessment of both the operational timeframe needed to transport materiel and an adversary's ability to detect unique transportation mechanisms remains relevant. The UW logistics feasibility assessment tool provides leaders and planners with such information. Given a well-coordinated, systematic approach, the development of various networks and mechanisms along the modes of transportation can enhance logistical resupply during a UW campaign. Subterranean mechanisms may prove a crucial cross-border mechanism

117 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

118 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

119 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

in more sophisticated UWOAs, specifically those with enhanced technologies to detect sea and air movement and strong security apparatuses.

4. Movement to Final Destination

Once a cross-border mechanism is implemented, movement to final destination must occur. These techniques remain similar to ones previously described in the movement to ISAs section. However, the environment likely has escalated from permissive/semi-permissive to non-permissive during the movement to final destination stage of a UW logistical resupply operation. Again, Mexican TCOs provide recent, applicable TTPs of how transportation of UW logistical supplies could occur given proper authorizations.

Recent intelligence indicates that once crossing the U.S./Mexico border, a system of rapid, compartmentalized movements occurs to transport illegal aliens, drugs, and money to their final destination. These movements are generally short in nature (20–30 miles), and are conducted in public places where the transported individual or courier is simply given a phone number to call.[120] The speed at which these transactions occur recently increased from previous patterns. Historically, safe houses would accommodate a large number of illegal aliens for several days before moving them to another destination. Now, safe houses rarely quarter illegal aliens or illicit materiel overnight. Techniques continue to evolve to expedite and further compartmentalize the movement through the use of cutouts.[121] Such TTPs remain applicable to the resupply of a UW campaign, especially once supplies move into a non-permissive UW environment.

5. Storage of Materiel

Once prioritized resupply bundles reach their final destination within a UWOA, they must either be distributed to resistance force elements or stored for future use.

120 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014.

121 Officer, United States Custom and Border Agency, Smuggling Interdiction Group, interview, April 16, 2014 .

Distribution and link-up procedures are established prior to the transition of materiel. Bona fides and security procedures will be communicated prior to distribution.

If storage is warranted, multiple techniques ranging from storage in a facility to various cache techniques may be utilized. Appendix D of *TC 18-01: Special Forces Unconventional Warfare* covers in detail caching techniques and considerations.[122] For brevity purposes, the appendix is attached to this thesis to provide more information surrounding the art and science of caching.

122 Department of the Army, TC 18-01, D1–D20.

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IV. THE USE OF DECEPTION DURING NON-STANDARD RESUPPLY

> All warfare is based on deception. Hence, when able to attack, we must seem unable; when using our forces, we must seem inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near.—Sun Tzu[123]

A. THE HISTORICAL IMPORTANCE OF MILITARY DECEPTION

Since the onset of warfare, deception practices at the tactical, operational, and strategic levels of war supported decisive operations of military campaigns or in certain cases proved to be the decisive operation. Whether the Chinese' application of Sun Tzu's teachings, the use of the Trojan Horse, or the Battle of Cannae (where Hannibal defeated the Romans), deception in military operations remain historically significant.[124] As militaries and technologies evolved, deception also evolved. George Washington utilized deception during the American Revolution to confuse the British Army. Relying heavily on disinformation, Washington conducted a multi-layered military deception plan to deceive the British into believing his army was three to four times larger than it actually was.[125]

Moving to World War II, deception became increasingly important for many actors, specifically Germany, the United States, Great Britain, and the Soviet Union. From a German perspective, deception began in the 1930s as it consistently inflated the Luftwaffe's capabilities to the world.[126] Additionally, Hitler coordinated this inflated strength with foreign policy. Few countries in the past century, if any, accomplished more

123 "Sun, Tzu," Quotes Daddy, accessed September 21, 2014, http://www,quotesdaddy.com/quote/620480/sun-tzu/war-is-based-on-deception.

124 Kalev Sepp, Psywar and Deception (lecture, Naval Postgraduate School, Monterey, CA, May 6, 2014).

125 Peter F. Stevens, "Early Disinformation Campaign: George Washington was Master of Deception Employed against the British," *Military History* 9, no. 2 (June 1992): 16.

126 Michael Mihalka, "German Strategic Deception in the 1930s," Santa Monica, CA: RAND, July 1980, viii.

than Germany did.[127] Relying on this inflated strength, Hitler would claim "one last territorial demand," only to utilize the same technique to capture more and more of Europe.[128] This likely culminated with the massive deception operation, *Barbarossa*, which allowed Germany to invade the Soviet Union with overwhelming force and surprise. The Russo-German Non-Aggression Pact and a sustained war with Great Britain contributed to a false Soviet sense of security.[129] Additionally, Germany expanded trade with the Union of Soviet Socialist Republics (USSR), utilized rumors to confuse the USSR, minimized radio transmissions, conducted night movements of personnel and equipment, kept a minimal military footprint along the Polish-Soviet border, and adhered to strict radio silence prior to the invasion. These deceptions facilitated Germany achieving an immense tactical surprise as 145 divisions invaded the USSR in June 1941.[130]

The United States also relied heavily on military deception in World War II. Plan BODYGAURD, the United States' overarching deception policy against Germany consisted of multiple deception operations, signaling to Germany that the U.S. was incapable of conducting an amphibious landing until the late summer of 1944 and intended to attack Norway in the spring.[131] Additionally, Great Britain conducted Operation Mincemeat, a brilliant deception operation that achieved operational and strategic effects during the Allied invasion of Sicily.[132] During Mincemeat, a deceased British officer ("Major Martin") was first preserved, given a new identity as a high-level staff officer, outfitted with pocket litter and highly classified false documents, transported via submarine to the Italian coast, and let drift ashore for Italian agents to find.[133] The

127 Mihalka, "German Strategic Deception in the 1930s," ix.

128 Mihalka, "German Strategic Deception in the 1930s," viii.

129 Russel H.S. Stolfi, "Barbarossa: German Grand Deception and the Achievement of Strategic and Tactical Surprise against the Soviet Union: 1940-1941," in *Strategic Military Deception*, ed. Donald C. Daniel (New York: Pergamon Press, 1982), 196.

130 Stolfi, "Barbarossa," 204–213.

131 Roger Hesketh, *FORTITUDE: The D-Day Deception Campaign* (New York: The Overlook Press, 2002), 155.

132 Ewen Montagu, *The Man Who Never Was* (New York: J.B. Lippincott Company, 1954).

133 Montagu, *The Man Who Never Was.*

deception operation worked brilliantly as Italian agents turned the documents and pocket litter over to German officials, confounding German intelligence and operational staffs, as well as Hitler himself.[134]

The Soviet Union's successful use of military deception, or *maskirovka*, achieved operational and strategic effects during World War II. At Stalingrad, Soviet deception operations covered the "forward deployment of over 300,000 men, 1,000 tanks, and 5,000 guns and mortars with ammunition, fuel, and other supplies."[135] Soviet deception operations in Belorussia in 1944 and Manchuria in 1945 were of the scope and magnitude to achieve strategic effects.[136] In Belorussia, the 1st Baltic Front moved 12 rifle divisions and a tank corps (over 100,000 men) from one front sector's right flank to its left flank (a distance of 120 kilometers) in three nights.[137] To prepare for Manchuria, the Soviets moved 700,000 men over 9,000 kilometers by utilizing the Trans-Siberian Railroad.[138] This movement led to the defeat of the Japanese in Manchuria.

Following World War II, the USSR continued its systematic use of military deception during the Cold War. Throughout the Cold War, the USSR deceived others regarding its nuclear arsenal. Both the USSR's nuclear capabilities and quantities proved to be deceptions. As Michael Mihalka states, "the Soviets have consistently disguised the true strength of their strategic nuclear intercontinental forces: when weak, feigning strength; when strong, feigning parity." [139] The Soviets learned from the Germans in the 1930s and conducted several bomber demonstrations. These, undermined the Soviets'

134 Montagu, *The Man Who Never Was*.

135 David M. Glantz, "The Red Mask: The Nature and Legacy of Soviet Military Deception in the Second World War," *Intelligence and National Security* 2, no. 3 (1987): 206

136 Glantz, "The Red Mask," 191–192.

137 Glantz, "The Red Mask," 220.

138 Glantz, "The Red Mask," 231.

139 Michael Mihalka, "Soviet Strategic Deception, 1955-1981," *Journal of Strategic Studies* 5, no. 1 (1982): 41.

true capabilities. During a visit with U.S. General Twining, the USSR feigned weakness surrounding their bomber program.[140] This deception may or may not have convinced the U.S. which nation held the upper hand in the arms race.

The Cuban missile crisis briefly resolved the debate about whether the U.S. or USSR led the nuclear arms race. Since the USSR was in a significantly weaker position with respect to intercontinental ballistic missiles (ICBMs), it decided to transport short range nuclear missiles to Cuba. This decision largely was based upon previous deception failures with the USSR's ICBM program.[141] Ultimately, the operation failed, leaving the USSR weakened from a strategic standpoint, due to the technological capabilities of the U2 aircraft and President John F. Kennedy's leadership.[142] While the success of Soviet deception operations during the Cold War may be argued, Moscow systematically employed such measures. The Soviet Union conducted expansive military deceptions throughout the better half of the twentieth century, for better or worse.

Moving to the modern era, al-Qaeda systematically incorporates deception in its organization's operations. Al-Qaeda utilizes deception, denial, and other counterintelligence (CI) practices into its operators' training.[143] Al-Qaeda operatives employed codes, false names, cover identities, disguises, sleeper cells, business fronts, and other CI tactics such as information and personnel compartmentalization in its East African Embassy bombings.[144] The Al-Qaeda operatives who carried out the attacks on September 11, 2001 also utilized deception in many prior attacks. Previous operations were broken into two separate cells, one focused on infrastructure development, logistics, and operational planning; the other carrying the terrorist acts out themselves.[145] The first cell conducted surveillance, tested target security, gathered intelligence, acquired explosives, and constructed bombs. The second cell conducted the actual terrorist

140 Mihalka, "Soviet Strategic Deception, 1955-1981," 46.

141 Mihalka, "Soviet Strategic Deception, 1955-1981," 50.

142 Mihalka, "Soviet Strategic Deception, 1955-1981," 50.

143 Richard Shultz and Ruth Beitler, "Tactical Deception and Strategic Surprise in Al-Qa'ida Operations," *Middle East Review of International Affairs* 8, no. 2 (June 2004): 56.

144 Shultz and Beitler, "Tactical Deception and Strategic Surprise in Al-Qa'ida Operations," 66.

145 Shultz and Beitler, "Tactical Deception and Strategic Surprise in Al-Qa'ida Operations," 67.

operation.[146] During the September 11th attacks, al-Qaeda operatives allegedly bought extra seats on the aircrafts to lessen resistance that may have been encountered during the hijackings.[147] The United States' enemies systematically employ deception to confuse, complicate, and hamper government efforts to thwart attacks. Next, the principles of deception and their application to UW logistics will be explored.

B. DECEPTION PRINCIPLES

It is important to have a common understanding of the underlying principles involved in military deception. First, the target of any deception is the decision-maker.[148] Almost always the adversarial decision-maker is attacked through his/her intelligence system.[149] Jon Latimer argues seven principles of deception exist: focus, action, coordination and centralized control, preparation and timing, security, credibility and confirmation, and flexibility.[150] Focus involves the target, the decision-maker. Action is the conduct of the operation focused on the target. Coordination during complex deceptions remains extremely important given the sensitivities surrounding the operation. This requires centralized control. Preparation and timing remain integral factors during any deception operation. If timing fails (or preparation for a deception operation lacks) the operation likely will fail. Without credibility, no deception operation will succeed. Confirming the results of a deception is difficult (but integral) through various feedback loops. Finally, flexibility is an inherent principle in any deception operation. Given the complex nature of making an adversary believe lies, one must remain flexible, varying a plan accordingly as the situation evolves.

Donald Daniel and Katherine Herbig confirm these principles stating, "the basics of deception include: secrecy, organization, and coordination; plausibility and

146 Shultz and Beitler, "Tactical Deception and Strategic Surprise in Al-Qa'ida Operations," 67.

147 Shultz and Beitler, "Tactical Deception and Strategic Surprise in Al-Qa'ida Operations," 73.

148 Walter Jajko, "Deception: Appeal for Acceptance; Discourse on Doctrine; Preface to Planning," *Comparative Strategy* 21, no. 5 (2002): 352.

149 Walter Jajko, "Deception," 359.

150 Jon Lattimer, *Deception in War: The Art of the Bluff, the Value of Deceit, and the Most Thrilling Episodes of Cunning in Military History, from the Trojan Horse to the Gulf War* (New York: The Overlook Press, 2001), 60–70.

confirmation; adaptability; the predispositions of the target; and factors in the strategic situation."[151] Joint Publication (JP) 3-13.4 *Military Deception* states the six principles of military deception (MILDEC) are:

> (1) **focus**—the deception must target the adversary decision maker capable of taking the desired action(s); (2) **objective**—the deception must cause an adversary to take (or not to take) specific actions, not just to believe certain things; (3) **centralized planning and control**—MILDEC operations should be centrally planned and directed in order to achieve unity of effort; (4) **security**—friendly forces must deny knowledge of a force's intent to deceive and the execution of that intent to adversaries; (5) **timeliness**—a deception operation requires careful timing; and (6) **integration**—fully integrate each military deception with the operation that it is supporting.[152]

Given these common principles of MILDEC and the historical significance of such operations, MILDEC's incorporation into the UW logistics planning and execution cycle is critical. The following section discusses the integration of MILDEC as a supporting effort when utilizing networked non-standard approaches to conduct UW logistical resupply.

C. INTEGRATING THE DECEPTION EXECUTION CYCLE WITH NON-STANDARD RESUPPLY

While the UW planning and execution cycle (described in Chapter I) lists the incorporation of MILDEC during Step 4, it is crucial to synchronize actions throughout the entire process. Given the previously described principles, it remains important to have a core cadre of leaders involved in the supporting MILDEC operation and participating during the UW logistics feasibility assessment and networked non-standard approach selection. First, understanding the environment and the actual approach to conduct UW logistical resupply is crucial to the formation of a supporting MILDEC plan. If the environment and approach are not understood, the supporting MILDEC plan may likely fail. Clearly, the principles of centralized planning and control and integration are necessary throughout the entire UW logistics planning and execution cycle.

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151 Donald C. Daniel and Katherine L. Herbig, "Propositions on Military Deception," in *Strategic Military Deception*, ed. Donald C. Daniel (New York: Pergamon Press, 1982), 16.

152 Chairman of the Joint Chiefs of Staff, JP 3-13.4, viii.

Transitioning to JP 3-13.4's deception execution cycle (depicted below in Figure 8), this cycle's integration with the UW logistics planning and execution cycle is essential. Step 1 of the deception execution cycle (coordinating the initial deception and operations execution timing) should be linked to steps 2 (conduct multi-categorical UW logistics feasibility assessment) and 3 (determine non-standard resupply approaches) of the UW logistics planning and execution cycle. Without a thorough understanding of the UWOA or planned non-standard resupply approaches, a supporting deception operation is futile. It is crucial to maintain centralized planning throughout the entire logistics resupply operation.

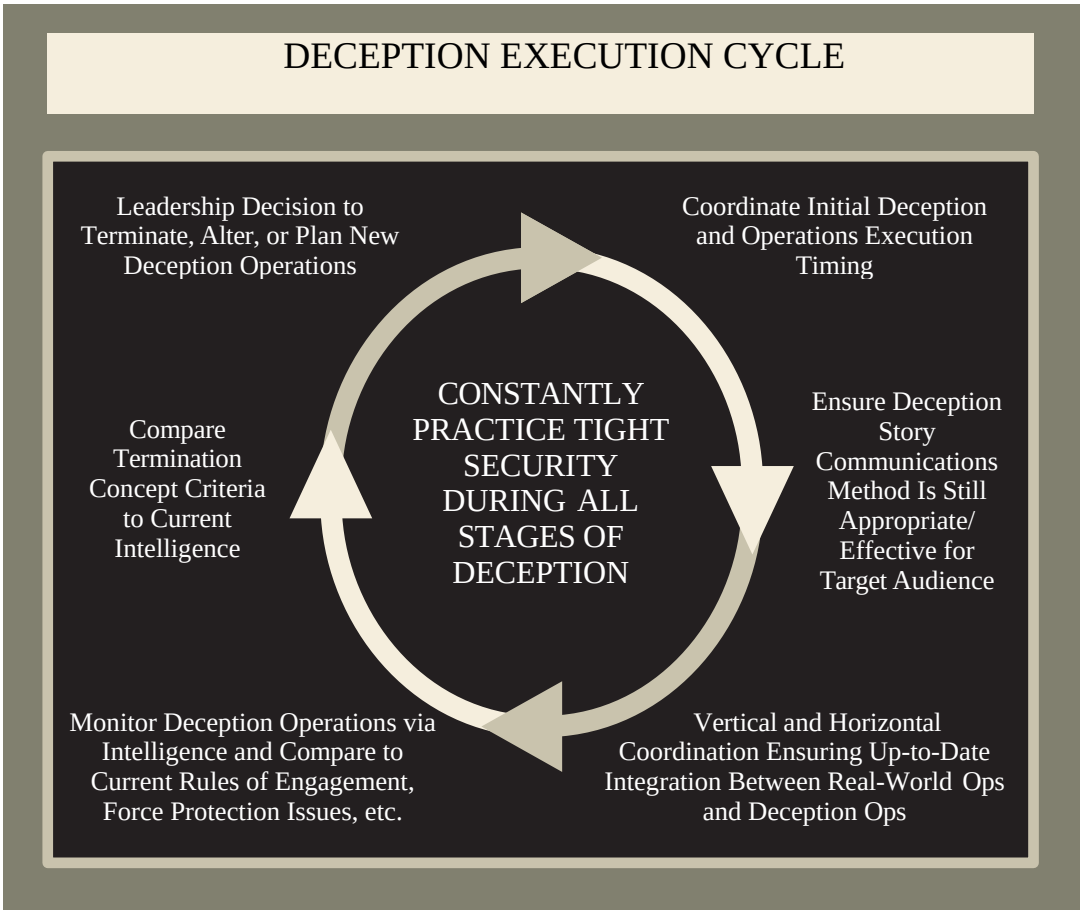

Figure 8. Figure V-1. Deception Execution Cycle (from JP 3-13.4: Military Deception)[153]

153 Chairman of the Joint Chiefs of Staff, JP 3-13.4,V-3.

Step 2 of the deception execution style (ensure deception story communications method is still appropriate/effective for target audience) must be strictly adhered to by MILDEC planners. If the source of any misinformation or disinformation is questionable, the entire supporting MILDEC operation could be jeopardized. Proper, credible communication channels should be explored while conducting the UW feasibility assessment during the UW planning and execution cycle. These legitimate channels should be leveraged to add credence to any messaging without increasing one's footprint. These channels may incorporate source networks (including the use of potential double agents) or more overt measures such as utilizing diplomatic channels, radio, Internet, or television through strategic communication. Linking an appropriate information operations (IO) message with a MILDEC operation is fundamental to ensuring the MILDEC operation is viewed as credible.

Step 3 of the deception execution cycle (vertical and horizontal coordination ensuring up-to-date integration between real-world ops and deception ops) is also critical during non-standard UW logistical resupply. As noted, a core cadre of planners and leaders remains necessary to coordinate and compartmentalize the operation throughout all phases of the UW logistics planning and execution cycle. The number of core cadre will vary depending on the complexity and sensitivity of the operation. However, this group needs to be small enough to prevent leakage, but large enough to effectively plan and execute the various phases of the model.

Step 4 of the deception execution cycle (monitor deception operations via intelligence and compare to current rules of engagement, force protection issues, etc.) is an ongoing step throughout the UW planning and execution cycle. This step in the deception execution cycle inherently is represented by the feedback loops in the general UW logistics resupply model. Without feedback, adjustments to the supporting deception operation (and perhaps the resupply operation itself) may be missed, causing compromise and mission failure. Refinements to future non-standard approaches, supporting deception operations, and the assessment of the UWOA are gathered and implemented during this step.

Steps 5 (compare termination concept criteria to current intelligence) and 6 (leadership decision to terminate, alter, or plan new deception operations) complete the deception execution cycle. These steps and subsequent decisions will rely heavily on the feedback mechanisms within the general UW logistical resupply model. Ultimately a leader's decisions and actions will depend upon risk tolerance, the severity of logistical shortages within a UWOA, the growth of the UW campaign itself, and other factors.

The deception execution cycle within JP 3-13.4: *Military Deception* provides an easily understood method of coordinating and executing a supporting MILDEC operation. Synchronizing this cycle with the UW logistics planning and execution cycle facilitates the use of MILDEC as a supporting effort to non-standard resupply approaches during a UW campaign. Specific examples of supporting MILDEC operations to non-standard resupply were not explored because such examples are based upon the specific nature of the UWOA and adversarial decision-makers within it. Any supporting MILDEC operation will be based strongly upon these factors; hence the participation of an integrated core cadre of planners and leaders is warranted throughout the entire UW logistics planning and execution cycle.

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V. CONCLUSION AND RECOMMENDATIONS

A. CONCLUSION

Like all military campaigns, a UW campaign must also be logistically supported to enhance its chances of success. Chapter I of this thesis provided context to the importance of this topic, while highlighting potential doctrinal gaps and historic cases where UW campaigns lacked logistical support. While the 2013 RAND study on non-standard logistics (NSL) also identified current doctrinal gaps, and provided both general and specific recommendations to USASOC leaders, it did not produce a general UW logistics resupply model to be implemented.[154] This thesis built upon the RAND study, providing a general model to conduct non-standard resupply.

This model is explained in greater detail through the six-step UW logistics planning and execution cycle (RANDOM). This cycle begins with receipt of mission, and then continues by gaining a thorough understanding of the situation within the UWOA through the use of the multi-categorical UW logistics feasibility tool. Following this assessment, a non-standard approach is chosen to conduct the resupply operation itself. Framing the approach along three axes (modes of transportation, prioritized classes of resupply, and phases of the resupply operation) allows decision-makers and planners to understand the nuances involved with a resupply operation. The approach is then operationalized through the UW synchronization matrix.

A supporting military deception plan is synchronized with the non-standard approach (given an understanding of the UWOA and adversarial decision-makers). This deception operation involves a core cadre of leaders and planners throughout all phases of the UW planning and execution cycle to facilitate horizontal and vertical integration into the approach and reduce spillage of sensitive information.

The UW logistical resupply operation is then executed, and feedback from operators on the ground, the UW resistance force, and intelligence sources allow

154 Boyer, Butler, Halliday, Klinghoffer, and Speaks, *Non-Standard Logistics Support for Unconventional Warfare,* xi–xxi. This document is classified Secret//NOFORN. (Citation information is unclassified).

refinements to future non-standard resupply approaches and supporting deception operations to be made if necessary. Additionally, these feedback mechanisms enhance the situational understanding of the UWOA, allowing refinement of any initial assessments made utilizing the multi-categorical UW logistics feasibility tool. The cycle is completed with the receipt of another UW logistical resupply mission.

B. RECOMMENDATIONS

First, this thesis provides a doctrinal approach to conducting non-standard UW logistical resupply utilizing networks and deception. Since existing doctrine covering this topic remains limited, portions of this document could be transferred into a standalone doctrinal publication, a handbook for UW campaign planners and logisticians, or attached as an Appendix to existing doctrine such as FM 3-05.130: *Army Special Operations Forces Unconventional Warfare* or TC 18-01: *Special Forces Unconventional Warfare.* Knowledge surrounding networked, non-standard approaches to logistically sustain a UW campaign should be distributed to all SOF.

Second, a UW logistics coordination cell should be established within USSOCOM to supervise, coordinate, and synchronize non-standard logistics across the command. This cell should also liaise with other government agencies (OGAs) in order to avoid duplication of effort when establishing mechanisms or networks to conduct non-standard resupply. While inter-agency coordination is challenging, having a single-point of contact within USSOCOM would create unity of effort for the cause. Additionally, the Office of Strategic Warfare concept within USASOC should play a significant role in the planning and execution of networked, non-standard UW logistical resupply approaches. Close coordination between elements of this organization and USSOCOM would be beneficial.

Third, education surrounding UW logistics is lacking. The author's experiences as a battalion support company commander led to this research. A regimented training course should be established for UW logisticians and support personnel to understand the complexities and difficulties surrounding the use of networked, non-standard approaches to resupply. Forming a common operating perspective among both SOF operators (who

likely would carry out resupply operations either unilaterally or through vetted networks) and logisticians planning, packaging, and transporting the materiel to be moved across sensitive regions into a UWOA, remains fundamentally important.

Finally, networked, non-standard approaches must be established prior to the conduct of a UW campaign. These compartmented networks take time to establish. Regionally anticipating future UW campaigns and the early preparation for them (from intelligence, operations, and logistical perspectives) remains paramount to mission success. Once a decision is made to conduct UW, the campaign must be logistically supported either through conventional mechanisms, or networked, non-standard approaches, or both. If networked, non-standard approaches are utilized, significant advanced planning and effort to establish these mechanisms is necessary months and possibly years ahead of time.

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APPENDIX. SPECIAL FORCES CACHING (FROM APPENDIX D OF TC 18-01)

The following appendix is a copy of Appendix D of TC 18-01: *Special Forces Unconventional Warfare*. This appendix provides guidance surrounding the art and science of caching items for use in unconventional warfare or other conflicts.[155]

Appendix D

Special Forces Caching

Caching is the process of hiding equipment or materials in a secure storage place with the intent of recovering the items for future operational use. The ultimate success of caching depends upon attention to details that may seem unimportant to the untrained eye. Security factors—such as cover for the caching party, sterility of the items cached, and removal of any traces of the caching operation—are vital. There are two other factors vital to successful caching. First, personnel must observe the technical factors governing the preservation of the items that maintain their usability. Second, personnel must accurately record data that is essential for recovery. Successful caching entails careful adherence to the basic principles of clandestine operations, as well as familiarity with the technicalities of caching.

VI. CACHING CONSIDERATIONS

D-1. Personnel must consider the purpose of their caches. For example, some cached supplies must meet the emergency needs of personnel unable to access their normal supply sources because of sudden developments. Caching may help to resolve the supply problems of long-term operations conducted far from a secure base. Caching could also provide for some anticipated needs of wartime operations in areas the enemy is likely to overrun.

VII. PLANNING FOR A CACHING OPERATION

D-2. Caching involves selecting the items for caching, procuring those items, and selecting a cache site. Selection requires a close estimate of items a unit will need for particular operations. Procurement of the items does not usually present a problem. In fact, the relative ease of procurement before an emergency arises is one of the prime considerations in favor of caching. When selecting a cache site, planners should always ensure that the site is accessible not only for emplacement but also for recovery. When planning a caching operation, the planner must consider the following six basic factors:

- Purpose and contents of the cache.
- Anticipated enemy action.

[155] Department of the Army, TC 18-01, D1-D20.

- Activities of the local population.
- Intended actions by allied forces.

- Packaging and transportation.
- Personnel assets.

PURPOSE AND CONTENTS OF THE CACHE

D-3. Planners must determine the purpose and contents of each cache because these basic factors influence the location of the cache and the method of hiding. For instance, personnel can cache small barter items at any secure, accessible site because personnel can easily conceal the items once recovered. However, it would be difficult for a guerrilla band to conceal rifles once it recovers them. Therefore, personnel must locate a rifle cache site in an isolated area where they can establish temporary control. Certain items, such as medical stock, have limited shelf life and require periodic rotation or special storage considerations, which necessitates the guerrillas having easy access to these items for servicing. Sometimes it is impossible to locate a cache in the most convenient place for an intended user. Planners must compromise between logistical objectives and actual possibilities when selecting a cache site. Security is always the overriding consideration.

ANTICIPATED ENEMY ACTION

D-4. In planning the caching operation, units must consider the capabilities of any intelligence or security services not participating in the operation. They should also consider the potential hazards the enemy and its witting or unwitting accomplices present. If the purpose of caching is for wartime operational purposes, its ultimate success will depend largely on if planners anticipate the various recovery obstacles the enemy and its accomplices will create if they occupy the area. What are the possibilities that the enemy will preempt an ideal site by denying access to it? A vacant field surrounded by brush may seem ideal for a particular cache because it is near several highways, but such a location may also invite the enemy to locate an ordnance depot in the same place.

ACTIVITIES OF THE LOCAL POPULATION

D-5. Chance circumstances that result in the discovery of the cache are more likely than discovery by deliberate enemy action. Normal activity, such as building construction, may uncover the cache site or impede access to it. Planners cannot anticipate these circumstances, but they can attempt to avoid them by careful and imaginative observation of the prospective cache site and of the people who live near the site. If planners intend the cache for wartime use, they must project how the residents will react to the pressures of war and conquest. For example, one likely reaction is caching by the residents to protect their personal funds and valuables. If caching becomes popular, any likely cache site will receive unusual attention.

INTENDED ACTIONS BY ALLIED FORCES

D-6. Using one cache site for several clandestine operations involves a risk of mutual compromise. Therefore, planners should rule out suitable caching sites if they have selected them for other clandestine purposes, such as drops or safe houses. Planners should not locate a site where bombing or other allied military action will render it inaccessible if occupied. If planners intend the cache for wartime use, the caching party should avoid key areas, such as locations near key bridges, railroad intersections, power plants, and munitions factories.

PACKAGING AND TRANSPORTATION

D-7. Asset planners should assess the security needs, potential obstacles, and hazards that a prospective cache site can present. They should also consider whether they could use the operational assets for packaging and transporting the package to the site. Caching personnel obtain the best results when packaging center experts construct the package. Planners must first decide whether the caching party can securely transport the package from the HQ or the field-packaging center to the cache site in time to meet the operational schedules. If not, the planners must get the packaging done locally, perhaps in a safe house located within a few miles of the cache site. If such an arrangement is necessary, limited safe house possibilities may restrict the choice of cache sites.

PERSONNEL ASSETS

D-8. All personnel directly participating in the emplacement will know the cache location. Therefore, planners should use their most reliable individuals and minimize the number of participants. Planners must consider the distance from the person's residence to the prospective cache site. Participants must consider their reason or story for conducting this activity. Sometimes transportation and cover difficulties require planners to locate the cache site within a limited distance of the person's residence. The above considerations also apply to the recovery personnel.

VIII. CACHING METHODS

D-9. The caching method depends on the situation, which makes it unsound to lay down general rules, with the exception of suitability. Planners should always think in terms of suitability. For example, the method most suitable for each cache, considering its specific purpose, the actual situation in the particular locality, and the changes that may occur if the enemy gains control.

CONCEALMENT

D-10. Concealment requires the use of permanent man-made or natural features to hide or disguise the cache. Concealment has several advantages. Personnel can usually employ and recover a concealed cache with minimum time and labor. In addition, dry cave or building caching protects the package from the elements and requires less-elaborate packaging. In some cases, personnel can readily inspect a concealed cache from time to time to ensure that it is still usable. However, the chance of accidental discovery—in addition to all the hazards of wartime—may result in destruction or denial of access to a concealed cache site. The concealment method, therefore, is most suitable in cases where an exceptionally secure site is available or where a need for quick access to the cache justifies a calculated sacrifice in security. Concealment may range from securing small gold coins under a tile in the floor to walling up artillery in caves.

BURIAL

D-11. Planners can find adequate burial sites almost anywhere. Once in place, a properly buried cache is generally the best way of achieving lasting security. In contrast to concealment, however, burial in the ground is a laborious and time-consuming method of caching. The disadvantages of burial are that—

- Burial usually requires a high-quality container or special wrapping to protect the cache from moisture, chemicals, and bacteria in the soil.
- Emplacement or recovery of a buried cache usually takes so long that the operation must be done after dark unless the site is exceptionally secluded.
- Identification and location of a buried cache is especially difficult.

SUBMERSION

D-12. Secure concealment submersion sites are difficult to find. In addition, the packager must use a container that meets such high standards for waterproofing and resistance to external pressure that the use of field expedients is seldom a workable option. To ensure that a submerged cache remains dry and in place, planners must determine not only the depth of the water but also the type of bottom, as well as the currents and other facts that are relatively difficult to obtain.

IX. SITE SELECTION

D-13. The most careful estimates of future operational conditions cannot ensure the accessibility of a cache when personnel need it. The following paragraphs address site selection considerations.

SELECTION CRITERIA

D-14. Planners consider a site for a cache if it meets the certain qualifications. Cache site selection must allow personnel to—

- Locate the site by simple instructions that are unmistakably clear to someone who has never visited the location. A site may be ideal in every respect, but if it has no distinct, permanent landmarks within a readily measurable distance, planners must rule it out.
- Access and egress the site by at least two secure routes. Both primary and alternate routes should provide natural concealment so that the emplacement party and the recovery party can visit the site without casual observation.
- Emplace and recover the cache at the site in all seasons. Snow and frozen ground create special problems. Snow on the ground is a hazard because it is impossible to erase a trail in the snow. Planners must consider whether seasonal changes in the foliage will leave the site and the route dangerously exposed.

MAP SURVEY

D-15. Finding a cache site is often difficult. Usually, a thorough systematic survey of the general area designated for the cache is required. The survey is best done with a large-scale map of the area, if available. By scrutinizing the map, the planners can determine whether a particular sector must be ruled out because of its proximity to factories, homes, busy thoroughfares, or probable military targets in wartime. A good military-type map will show the positive features in the topography, proximity to adequate roads or trails, natural concealment (for example, surrounding woods or groves), and adequate drainage. Maps also show the natural and man-made features in the landscape, which provide indispensable reference points for locating a cache site, such as confluences of streams, dams and waterfalls, road junctures and distance markers, villages, bridges, churches, and cemeteries.

PERSONAL RECONNAISSANCE

D-16. A map survey should normally show the location of several promising sites within the general area planners designate for the cache. To select and pinpoint the best site, a well-qualified observer must examine each site firsthand. If possible, the individual examining the site should carry adequate maps, a compass, a drawing pad or board for making sketch maps or tracings, and a metallic measuring line. (A wire knotted at regular intervals is adequate for measuring. Personnel should not use twine or cloth measuring tapes because stretching or

shrinking will make them inaccurate if they get wet.) If the observer can carry it securely, he should also carry a probe rod for probing prospective burial sites.

D-17. Since the observer seldom completes a field survey without local residents noticing him, the explanation for his actions is of importance. The observer's story must offer a natural explanation for his exploratory activity in the area. Ordinarily, this means that an observer who is not a known resident of the area can pose as a tourist or a newcomer with some reason for visiting the area. However, the observer must develop this story over an extended period before he conducts the actual reconnaissance. If the observer is a known resident of the area, he cannot suddenly begin hunting, fishing, or wildlife photography without arousing interest and perhaps suspicion. The observer must build up a reputation for involvement in the sport or hobby.

REFERENCE POINTS

D-18. When the observer finds a suitable cache site, he prepares simple and unmistakable instructions for locating the reference points. These instructions must identify the general area (the names of general recognizable places, from the country to the nearest village) and an immediate reference point. The observer can use any durable landmark personnel can easily identify by its title or a simple description (for example, the only Roman Catholic church in a certain village or the only bridge on a named road between two villages). The observer must include a final reference point (FRP) in his instructions. The FRP must meet four requirements. The FRP must be—

- Identifiable and include at least one feature that personnel can use as a precise reference point.
- An object that will remain fixed as long as personnel use the cache.
- Near enough to the cache to pinpoint the exact location of the cache by precise linear measurements from the FRP to the cache.
- Related to the immediate reference point by a simple route description, which proceeds from the immediate reference point to the FRP.

D-19. Since the observer should reduce the route description to the minimum essentials, the ideal solution for locating the cache is to combine the immediate reference point and the FRP into one readily identifiable landmark that is also sufficiently secluded. The following objects, when available, are sometimes ideal reference points:

- Small, unfrequented bridges and dams.
- Boundary markers.
- Kilometer markers and culverts along unfrequented roads.
- A geodetic survey marker.
- Battle monuments and wayside shrines.

D-20. When such reference points are not available at an otherwise suitable cache site, FRPs may be natural or man-made objects, such as distinct rocks, posts for power or telephone lines, intersections in stone fences or hedgerows, and gravestones in isolated cemeteries.

X. PINPOINTING TECHNIQUES

D-21. Recovery instructions must identify the exact location of the cache. These instructions must describe the point where the cache is located in terms that relate it to the FRP. When the emplacement team uses the concealment method, it ordinarily places the cache inside the FRP and pinpoints the cache by a precise description of the FRP. Personnel usually pinpoint a submerged cache by precisely describing the securing method of the moorings in reference to the FRP. Any of the following pinpointing techniques may be used with a buried cache.

PLACING THE CACHE DIRECTLY BESIDE THE FINAL REFERENCE POINT

D-22. The simplest method is for personnel to place the cache directly beside the FRP. Pinpointing is then reduced to the observer specifying the precise reference point of the FRP.

SIGHTING THE CACHE BY PROJECTION

D-23. Personnel may sight the cache by projection if the FRP has one flat side long enough to permit precise sighting by projecting a line along the side of the object. The emplacement party places the cache a measured distance along the sighted line. Personnel may also use this method if two precise FRPs are available by projecting a line sighted between the two objects. In either case, the instructions for finding the cache must state the approximate direction of the cache from the FRP. Since small errors in sighting are magnified as the sighted line is extended, the emplacement team should place the cache as close to the FRP as other factors permit.

Note: This method ordinarily becomes unreliable if the sighted line is extended beyond 50 meters.

PLACING THE CACHE AT THE INTERSECTION OF MEASURED LINES

D-24. If two FRPs are available within several paces, personnel can cache the package on one line projected from each of the FRPs. If the team uses this method, they must state the approximate direction of the cache from each FRP. To ensure accuracy, the emplacement team should not make either of the projected lines (from the FRPs to the point of emplacement) more than twice as long as the baseline (between the two FRPs). If personnel maintain this proportion, the only limitation on the length of the projected lines is the length of the measuring line that the recovery party carries. The recovery party should carry two measuring lines when the emplacement team uses this method.

SIGHTING THE CACHE BY COMPASS AZIMUTH

D-25. If the above methods of sighting are not feasible, personnel may project one measured line by taking a compass azimuth from the FRP to the cache placement point. To avoid confusion, personnel should use an azimuth to a cardinal point of the compass (north, east, south, or west). Since compass sightings are often inaccurate, personnel should not place caches pinpointed by this method more than 10 meters from the FRP.

MEASURING DISTANCES

D-26. The observer should express all measured distances in a linear system that the recovery party is sure to understand—ordinarily, the standard system for the country where the cache is located. He should use whole numbers (6 meters, not 6.3 or 6.5) to keep his instructions as brief and simple as possible. To get an exact location for the cache in whole numbers, the observer should take sightings and measurements first.

D-27. If the surface of the ground between the points to be measured is uneven, the observer should measure the linear distance on a direct line from point to point, rather than by following the contour of the ground. This method requires a measuring line long enough to reach the full distance from point to point and strong enough to be pulled taut without breaking.

MARKING TECHNIQUES

D-28. The team can simplify the emplacement operation and save critical time if the observer marks the cache point during his reconnaissance. If the team plans a night burial, personnel may need to mark the point of emplacement during a daylight reconnaissance. Personnel should only use this method when operational conditions permit. The marker must be an object

that is easily recognizable but that is meaningless to an unwitting observer. For example, the observer can use a small rock or place a branch with its butt at the point of emplacement as a marker.

D-29. Since marking information is also essential to the recovery operation, personnel must compile it after emplacement and include it in the final cache report. Therefore, the observer should be thoroughly familiar with the cache report before he starts a personal reconnaissance. This report is a checklist for the observer to record as much information as possible. The observer's personal reconnaissance also provides an excellent opportunity for a preliminary estimate of the time necessary to get to the site.

XI. ALTERNATE SITE

D-30. As a rule, planners should select an alternate site in case unforeseen difficulties prevent the use of the chosen site. Unless the primary site is in a completely deserted area, there is always some danger that the emplacement party will find it occupied as they approach or that locals will observe the party as they near the site. Planners should ensure the alternate site is far enough from the initial site to not be visible, but near enough so that the party can reach it without making a second trip.

XII. CONCEALMENT SITE

D-31. Ideal concealment sites will also attract enemies looking for cache sites and local civilians in occupied territories seeking to hide their valuables. The only key to identifying the ideal concealment site is careful observation of the area combined with great familiarity with local residents and their customs. The following is a list of likely concealment sites:

- Walls (hidden behind loose bricks or stones or a plastered surface).
- Abandoned buildings.
- Infrequently used structures (stadiums and other recreational facilities, and spur line railroad facilities).
- Memorial edifices (mausoleums, crypts, and monuments).
- Public buildings (museums, churches, and libraries).
- Ruins of historical interest.
- Culverts.
- Natural caves, caverns, abandoned mines, and quarries.
- Sewers.

D-32. Planners must ensure the concealment site is equally accessible to the person emplacing and the person recovering the cache. However, visits by both individuals to certain interior sites may compromise their cover. For instance, while a site in a house owned by a relative of the emplacer is suitable for the emplacer, if the recovery person has no connection with the owner, an adequate excuse for him to enter the house may not exist.

D-33. The site must remain accessible as long as the force needs the cache. If access to a building depends upon a personal relationship with the owner, the death of the owner or the sale of the property might render it inaccessible.

D-34. Personnel must ensure that discovery of the cache will not compromise individuals on the site. Even if a cache is completely sterile, as every cache should be, the mere fact that it has been placed in a particular site may compromise certain persons. For example, if the police discover the cache, they might suspect the emplacer because it was found in the home of his relative.

D-35. Planners must not locate the site in a place that potentially hostile persons frequently visit. For instance, a site in a museum is not secure if police guards or curious visitors frequently enter the museum.

D-36. To preserve the cache material, the emplacer must ensure the site is physically secure for the preservation of the cached material. For example, most buildings involve a risk that fire may damage or destroy the cache, especially in wartime. The emplacer should consider all risks and weigh them against the advantages of an interior site. A custodian may serve to ease access to a building or to guard a cache. However, the use of such a person is inadvisable because a custodian poses an additional security risk. He may use the contents of the cache for personal profit or reveal its location.

XIII. BURIAL SITE

D-37. In selecting a burial site, consider the following factors along with the basic considerations of suitability and accessibility.

DRAINAGE

D-38. Drainage considerations include the elevation of the site and type of soil. The importance of good drainage makes a site on high ground preferable unless other factors rule it out. Moisture is one of the greatest natural threats to the contents of a cache. Swamp muck is the most difficult soil to work in. If the site is near a stream or river, the emplacer should ensure that the cache is well above the all-year high-water mark so that rising water does not uncover and wash away the cache.

GROUND COVER

D-39. The types of vegetation at the site will influence the emplacer's choice. Roots of deciduous trees make digging difficult. Coniferous trees have less extensive root systems. In addition, the presence of coniferous trees usually means that the site drains well. Does the vegetation show paths or other indications that people visit the site too frequently for secure caching? Can the emplacer easily restore the ground cover to its normal appearance after burial of the cache? Tall grasses reveal trampling, but the emplacer can easily replace an overlay of leaves and humus that effectively conceals a freshly refilled hole.

NATURAL CONCEALMENT

D-40. The vegetation or the surrounding terrain should offer natural concealment for emplacement and recovery parties working at the site. Planners should carefully consider seasonal variations in the foliage.

TYPES OF SOIL

D-41. Burial in sandy loam is ideal because it is easy to dig and drains well. Planners should avoid clay soil because it becomes sticky in wet weather and too hard to dig in dry weather.

SNOWFALL AND FREEZING

D-42. If the personnel must emplace or recover the cache in winter, data on the normal snowfall, the depth of ground freeze, and the usual freeze and thaw dates will influence the site choice. Frozen ground impedes digging and requires additional time for burial and recovery. Snow on the ground is especially hazardous to the burial operation. It is almost impossible to restore snow over a burial site to its normal appearance unless there is more snowfall or a brisk wind. In addition, it is difficult for an emplacer to ensure that he leaves no trace of the operation after the snow has melted.

ROCKS AND OTHER SUBSURFACE OBSTRUCTIONS

D-43. To some extent, an emplacer can locate large obstructions that might prevent the use of a site before digging by probing with a rod or stake at the exact spot he is considering for the cache.

XIV. SUBMERSION SITE

D-44. A body of water must possess certain characteristics to be suitable for a submerged cache. The emplacer can only determine the presence of these characteristics by a thorough survey of the site. Emplacers will understand the importance of these characteristics after becoming familiar with the technicalities of submersion.

EMPLACEMENT

D-45. Submersion usually requires a boat, first for reconnoitering and then for emplacement. Thus, the availability of a boat and a plausible cover story generally determine the choice of submersion for a site. If no fishing or pleasure boating occur at the site, the emplacer may not have a workable cover story for the submersion. In tropical areas, seasonal rainfall often changes the course of streams or rivers and creates difficulties for the recovery team. Planners should keep this fact in mind when choosing the site and selecting reference points.

RECOVERY

D-46. Because the method for recovering a cache is generally similar to the method for emplacing a cache, it does not need a full description. However, planners should stress several important considerations in training for a recovery operation.

XV. PACKAGING

D-47. Packaging usually involves packing the cache items, as well as the additional processing to protect the items from adverse storage conditions. Proper packaging is important because inadequate packaging is likely to render the items unusable. Because special equipment and skilled technicians are necessary for best results, planners should accomplish packaging at HQ or a field-packaging center whenever possible. However, to familiarize operational personnel with the fundamentals of packaging and enable them to improvise field expedients for emergency use, this section discusses determining factors, packaging steps, wrapping materials, and container criteria.

DETERMINING FACTORS

D-48. The first rule of packaging is that the packager tailors all processing to fit the specific requirements of each cache. The cache items determine the size, shape, and weight of the package, the method of packaging, the recovery process, the cache method, and the use of the cache. For instance, if circumstances require one man to recover the cache alone, he can carry a container no larger than a small suitcase and no heavier than 30 pounds. Of course, some equipment precludes small containers, but planners should weigh the need for larger packages against the difficulties and risks of handling them. Even if more than one person is available for recovery, planners should divide the material, whenever possible, into separate packages of a size and weight readily portable by one man.

D-49. Another important factor for packagers to consider is adverse storage conditions. Any of the following conditions may be present at the cache site:

- Moisture.
- External pressure.
- Freezing temperatures.
- Bacteria and corrosive chemicals found in soil and water.

- Animal life that may pose a hazard, such as burrowing insects and rodents. If planners conceal the cache in an exterior site, large animals may also threaten it.

D-50. Whether or not the packaging is adequate usually depends upon how carefully the observer analyzed the conditions at the site and incorporated that information into the package design. For this reason, planners should determine the method of caching (burial, concealment, or submersion) before constructing the package.

D-51. It is also important for planners to consider how long they need to maintain the equipment cache. Because planners seldom know when they will need a cache, a sound rule is to design the packaging to withstand adverse storage conditions for at least the normal shelf life of the cached contents.

STEPS IN PACKAGING

D-52. The exact procedure for packaging depends upon the specific requirements for the cache and the available packaging equipment. The following eight steps are almost always necessary in packaging:

- Inspecting.
- Cleaning.
- Drying.
- Coating with preservative.
- Wrapping.
- Packing.
- Enclosing user instructions for the cached equipment.
- Sealing and testing seals by submersion.

XVI. Inspecting

D-53. Personnel must inspect the cache items immediately before packaging to ensure they are complete, serviceable, and free of corrosive or contaminated substances.

XVII. Cleaning

D-54. Personnel must thoroughly clean all corrodible items immediately before applying the final preservative coating. Personnel should completely remove all foreign matter, including any preservative applied before shipment of the item to the field. Throughout the packaging operation, personnel should handle all contents of the cache with rubber or freshly cleaned cotton gloves. Special handling is important because even minute particles of human sweat will corrode metallic equipment. In addition, any fingerprints on the contents of the cache may enable the enemy to identify the packagers.

XVIII. Drying

D-55. When personnel complete the cleaning, they must remove every trace of moisture from corrodible items. Methods of drying include wiping with an absorbent cloth, heating, or applying desiccant (a drying agent). Heating is usually the best drying method, unless heat can damage the items in the package. To dry by heating, the packager should place the cache items in an oven for at least 3 hours at a temperature of about 110 degrees Fahrenheit (F). Personnel can improvise an oven using a large metal can or drum. In humid climates, it is especially important to dry the oven thoroughly before using it by preheating it to at least 212 degrees F. After preheating, personnel should reduce the heat, waiting until the oven reaches 110 degrees F before inserting the equipment they want to cache. If personnel use a desiccant, they should not let it touch any metallic surface. Silica gel is a satisfactory desiccant and is commonly available.

XIX. Coating With a Preservative

D-56. Personnel may apply a light coat of oil to weapons, tools, and other items with unpainted metallic surfaces. A coat of paint may suffice for other metal items.

XX. Wrapping

D-57. After completing the drying and coating, the packager wraps the cache items in a suitable material. The packager ensures the wrapping is as waterproof as possible. He wraps each item separately to prevent one perforation in the wrapping from exposing all items in the cache. The wrapping should fit tightly to each item, eliminating air pockets. The packager also seals all folds with a waterproof substance.

XXI. Packing

D-58. The packager must observe the following rules when packing items in the container:

- Remove all moisture from the interior of the container by heating or applying desiccant. Pack a long-lasting desiccant inside the container to absorb any residual moisture. If the packager uses silica gel, he must calculate the required amount by using the ratio of 15 kilograms of silica gel to 1 cubic meter of storage space within the container. (This figure is based on the assumption that the container is completely moisture-proof and the contents are slightly moist when inserted.) Therefore, the ratio allows an ample margin for incomplete drying, and the packager can reduce the amount if he knows the drying process was highly effective.
- Eliminate air pockets as much as possible by tightly packing items. The packager should use thoroughly dried padding liberally to fill air pockets and to protect the contents from shock. If possible, he should use clothing and other items for padding, which the recovery party may find useful. Items made of different metals should never touch, since continuous contact may cause corrosion through electrolytic action.

XXII. Enclosing Instructions for Using Cached Equipment

D-59. The packager includes written instructions and diagrams if they facilitate the assembly or use of cached items. Instructions must be written in a language that recovery personnel can understand. The wording should be as simple as possible and unmistakably clear. Diagrams should be self-explanatory because the eventual user may not understand written instructions due to language barriers.

XXIII. Sealing and Testing Seals by Submersion

D-60. When the packager is done packing, he must seal the lid of the container, making it watertight. He can test the seal by entirely submerging the container in water and watching for escaping air bubbles. If possible, hot water should be used because hot water will uncover leaks that cold water will not.

WRAPPING MATERIALS

D-61. The most important requirement for wrapping material is that it is moisture-proof. In addition, the wrapping material should self-seal or adhere to a sealing material. It should be pliable enough to fit closely, with tight folds, and tough enough to resist tearing and puncturing. If the packager cannot find one material to meet his needs, he can use one wrapping material for pliability and another for toughness. He should use the thin, pliable material as the inner wrapper and the heavier, tough material as the outer layer. A tough outer wrapping is essential unless the container and the padding are adequate to prevent items from scraping together inside the cache. Five wrapping materials are recommended for field-expedient use because personnel can often obtain them locally and use them effectively, even if personnel are unskilled.

XXIV. Aluminum Foil for Use as an Inner Wrapping

D-62. Aluminum foil is the best of the widely available materials. It is moisture-proof as long as it does not become perforated and the folds are adequately sealed. The drawback of tin foil for caching is that thin foil perforates easily and heavy foil (over 2 millimeters thick) tends to admit moisture through the folds. The heavy-duty grade of aluminum foil sold for kitchen use is adequate when the packager uses an outer wrapping. Scrim-backed foil, which is heat-sealable, is widely used commercially to package articles for shipment or storage. Portable heat sealers that are easy to use are available commercially, or the packager can seal the foil with a standard household iron.

XXV. Moisture-Resistant Papers

D-63. Several commercial brands of wrapping papers resistant to water and grease are available. Alone they do not provide lasting protection against moisture, but they are effective as an inner wrapping to prevent rubber, wax, and similar substances from sticking to the items in the cache.

XXVI. Rubber Repair Gum

D-64. Rubber repair gum is a self-sealing compound mechanics generally use for repairing tires. Rubber repair gum makes an excellent outer wrapping. Standard commercial brands come in several thicknesses, but the 2-millimeter gum is best for caching. The packager can easily produce a watertight seal by placing two rubber surfaces together and applying pressure. The seal should be at least ½-inch wide. Because rubber repair gum has a tendency to adhere to items, the packager must use an inner wrapping of nonadhesive material and leave the backing on the rubber material to keep it from sticking to other items in the cache.

XXVII. Grade C Barrier Material

D-65. Grade C barrier material is a cloth impregnated with microcrystalline wax that distributors use extensively for packing items for overseas shipment. This material is widely available and is self-sealing. Although not as effective as rubber repair gum, packagers can use grade C barrier material as an outer wrapping over aluminum foil to prevent perforation of the foil. If the packager is not using an inner wrapping, packages require three layers of grade C barrier material, which may keep the contents dry for as long as three months, but is highly vulnerable to insects and rodents. In addition, the wax wrapping of the material has a low melting point and adhesive properties, so packagers should not use it without an inner wrapping unless it is an emergency.

XXVIII. Wax Coating

D-66. If no wrapping material is available, packagers can use an outer coating of microcrystalline wax, paraffin, or a similar waxy substance to protect the contents from moisture. A wax coating will not provide protection against insects and rodents. The packager should hot-dip the package in the waxy substance or apply the hot wax with a brush.

CONTAINER CRITERIA

D-67. The outer container protects the contents during exposure to shock, moisture, and other natural hazards. The ideal container is—

- Watertight and airtight upon sealing.
- Noiseless when handled. Handles should not rattle against the body of the container.
- Lightweight in construction.
- Equipped with a sealing device that personnel can easily and repeatedly close and open.

- Resistant to—
  - Shock and abrasion.
  - Crushing pressure.
  - Rodents, insects, and bacteria.
  - Highly acidic or alkaline soil or water.

XXIX. Stainless Steel Container

D-68. The standard stainless steel container comes in several sizes. Because the stainless steel container is better than any container the packager could improvise in the field, it should be used whenever possible. Ideally, he should pack the container at HQ or at a field-packaging center. If personnel must obtain caching items locally, it is still advisable to use a stainless steel container because it is highly resistant to moisture. In addition, stainless steel containers do not require an outer wrapping. However, even when using a stainless steel container, the packager should use a single inner wrapping to protect the contents from any residual moisture present in the container when he seals it.

XXX. Field-Expedient Container

D-69. Although Soldiers cannot improvise an ideal container in the field, standard military and commercial containers can meet caching requirements if Soldiers use care and resourcefulness while adapting them. First, a container must be strong enough not to puncture and keep its shape through rough handling or crushing pressure. (Even a slight warping may cause a joint around a lid to leak.) Second, if the lid is not already watertight and airtight, Soldiers must improvise a sealing device. The most common type of sealing device is a rubber-composition gasket or lining and a sharp, flat metal rim pressed against a threaded lid. Soldiers can increase this device's effectiveness by applying heavy grease to its threads. (Soldiers should not use metallic solder for sealing because it corrodes metal surfaces when exposed to moisture.) Whenever Soldiers use any nonstainless metal container, they must apply several coats of high-quality paint to all exterior surfaces.

XXXI. Instrument Containers

D-70. Distributors normally ship aircraft and other precision instruments in steel containers with a waterproof sealing device. Standard instrument containers range from 1/2 gallon to 10 gallons. If Soldiers can find one that is the right size, they only need to make minimum modifications to use it as a cache container. The only weak point in the most common type of instrument container is the nut and bolt that tighten the locking band around the lid. Soldiers should replace the original nut and bolt with a stainless steel set.

XXXII. Ammunition Boxes

D-71. Several types of steel ammunition boxes have rubber gasket closing devices and are satisfactory for buried caches. An advantage of using ammunition boxes is that they are usually available at military depots.

XXXIII. Steel Drums

D-72. Soldiers may find a caching container of suitable size among the commercial steel drums businesses use to ship oil, grease, nails, soap, and other products. However, because most steel drums lack adequate sealing devices, Soldiers will need to treat them with waterproof materials. Fully removable head drums with lock-ring closures generally give a satisfactory seal.

XXXIV. Glass Jars

D-73. The advantage of using glass is that it is waterproof and does not allow chemicals, bacteria, and insects to pass through it. Although glass is highly vulnerable to shock, glass jars of a sturdy quality can withstand the crushing pressure caching involves. However, glass jars do not have adequate sealing devices for the joint around the lid. Standard commercial canning jars with spring clamps and rubber washers are watertight, but the metal clamps are vulnerable to corrosion. This vulnerability makes these jars adequate expedients for short-term caching of small items, but Soldiers should not rely upon them to resist moisture for more than one year.

XXXV. Paint Cans

D-74. Standard cans with reusable lids require a waterproof adhesive around the lids. Apply several coats of paint to the exterior of standard commercial cans because the metal in these cans is not as heavy as that in metal drums. Even when the exterior is thoroughly painted, paint cans are unable to resist moisture for more than a few months.

XXXVI. METHODS OF EMPLACEMENT

D-75. Because burial is the most frequently used method of emplacement, this section describes first the complete procedure for burial, followed by a discussion of emplacement procedures peculiar to submersion and concealment. The last area discussed is the preparation of the cache report—a vital part of a caching operation.

BURIAL

D-76. When planners complete the design and selection of items for a cache, they must carefully work out every step of the burial operation in advance.

XXXVII. Horizontal and Vertical Caches

D-77. Ordinarily, the emplacement team buries the cache vertically (it digs a hole straight down from the surface). Sometimes a horizontal cache, with the hole dug into the side of a steep hill or bank, provides a workable solution when a suitable site on level or slightly sloping ground is not available. A horizontal cache may provide better drainage in areas of heavy rainfall, but it is more likely to be exposed by soil erosion and more difficult to refill and restore to normal appearance.

XXXVIII. Dimensions of the Hole

D-78. The exact dimensions of the hole, either vertical or horizontal, depend on the size and shape of the cache container. As a general rule, the emplacer should make the hole large enough for him to easily insert the container. He should make the hole's horizontal dimensions about 30 centimeters longer and wider than the container. Most importantly, he should make the hole deep enough so that he can cover the container with about 45 centimeters of soil. Normally, this depth is deep enough to decrease the risk of soil erosion or indigenous activities uncovering the container. A deeper hole makes probing for recovery more difficult and unnecessarily prolongs the time necessary for burial and recovery.

XXXIX. Excavation Shoring

D-79. If there is a risk that the surrounding soil will cave in during excavation, the emplacer can use boards or bags filled with subsoil to shore the sides of the hole. The emplacer may need to use permanent shoring to protect improvised containers from pressure or shock.

XL. Equipment

D-80. Depending upon site conditions, the emplacer will find the following items helpful for burying a cache:

- Measuring instruments (a wire or metal tape and compass) for pinpointing the site.
- Paper and pencil for recording the measurements.
- Probe rod for locating rocks, large roots, or other obstacles in the subsoil.
- A minimum of two ground sheets for placing sod and loose soil on. If nothing else is available, the emplacer may use an article of clothing in place of a ground sheet for small excavations.
- Sacks (sandbags, flour sacks, or trash bags) for holding subsoil.
- Spade or pickax for digging ground that is too hard for spading.
- Hatchet for cutting roots.
- Crowbar for prying rocks.
- Flashlight or lamp for burying at night.

XLI. **Burial Party**

D-81. Aside from locating, digging, and refilling the hole, the most important factor at this phase of emplacement is personnel. Because it is impossible to prevent every member of the burial party from knowing the location of the cache, each member is a security concern for as long as the cache remains intact. Planners must use extreme care in their selection of burial party personnel. Once planners select a team, each person must have an adequate story to explain his absence from home or work during the operation, his trip to and from the site, and his possession of whatever equipment he cannot conceal on the trip. Depending on the number of people, the length of the trip and the equipment necessary for the operation, transportation for the burial party may present a problem for planners. Once planners finish working out the operational details, they must brief each member of the burial party on their tasks for the entire operation.

XLII. **Operational Schedule**

D-82. The final step in planning the emplacement operation is to make a schedule that sets the date, time, and place for every step of the operation that requires advance coordination. The schedule will depend mainly on the circumstances, but it must include a realistic estimate of how long it will take to complete the burial. Generalizations in the schedule are worthless, and the only sure guide is actual experience under similar conditions.

D-83. A careful burial job probably will take longer than most novices will expect. Therefore, if circumstances require a tight schedule, a dry run or test exercise before taking the package to the site is advisable. Unless the site is exceptionally well concealed or isolated, the burial should occur at night to avoid detection. Because of the difficulties of working in the dark, the burial party should conduct a nighttime practice exercise.

D-84. The schedule should permit waiting for advantageous weather conditions. The difficulties of snow have already been mentioned. Rainy weather makes digging problematic and complicates cover stories. Planners should plan night burials on moonless or heavily overcast nights.

XLIII. **Site Approach**

D-85. Regardless of how effective an individual's story is during the trip to the cache site, he must ensure he remains unobserved during his immediate approach to the site to prevent others from detecting the burial. To prevent observation, planners must carefully select the point at which the burial team is to disappear, perhaps by turning off a road into woods. They should also carefully select the reappearance point. In addition, the party should use a different return route. The burial party should strictly observe the rules for concealed movement. The party should proceed cautiously and silently along a route that makes the best use of natural concealment. Concealed movement requires foresight, with special attention to using natural

concealment while reconnoitering the route and preventing rattles when preparing the package and contents.

XLIV. Security Measures at the Site

D-86. The burial party must maintain maximum vigilance at the cache site because detection can be disastrous. The time spent at the site is the most critical. At least one lookout should constantly be on guard. The emplacer should frequently pause to look and listen. The burial party should minimize the use of flashlights or lanterns and take special care to mask the glare. Planning should include emergency actions in case the burial party is interrupted. Thorough briefing permits the party to respond instantly to any sign of danger. Planners should consider escape routes and decide whether the party will attempt to retain the package or conceal it along the escape route if the operation is disrupted.

XLV. Steps in Digging and Refilling

D-87. Although procedures will vary slightly with the design of the cache, persons involved in caching operations must never overlook basic steps. The whole design of the procedure is to enable the emplacer to restore the site to its original appearance as much as possible.

XLVI. Site Sterilization

D-88. When the burial party refills the hole, they must make a special effort to ensure that they sterilize and restore the site, leaving no indication of the burial or the burial party's visit to the vicinity. Because sterilization is most important for the security of the operation, the schedule should allow ample time to complete these final steps in a deliberate and thorough manner. The final steps of the burial are to—

- Dispose of any excess soil far enough away from the site to avoid attracting attention to the site. Flushing the excess soil into a stream is the ideal solution.
- Check all tools and equipment against a checklist to ensure that nothing is left behind. The checklist should include all personal items that may drop from pockets. To minimize this risk, members of the burial party should only carry items essential for doing the job and disguising their actions.
- Make a final inspection of the site for any traces of the burial. Because this is more difficult on dark nights, it is essential emplacers carefully prepare a checklist and use it. If an emplacer can safely return to the site during daylight, he can inspect it for any evidence of the operation.

SUBMERSION

D-89. Emplacing a submerged cache always involves two basic steps: weighting the container to keep it from floating to the surface and mooring it to keep it in place.

XLVII. Anchors and Moorings

D-90. Ordinarily, container weights rest on the bottom of a lake or river functioning as anchors, and moorings connect these anchors to the container. Moorings also serve as handles for recovering a cache. If the moorings are not accessible for recovery, another line must extend from the cache to a fixed, accessible object in the water or on shore. The four types of moorings are buoy, line-to-shore, spiderweb, and structural.

XLVIII. *Buoy Mooring*

D-91. Buoy mooring uses a line run from the weighted container to a buoy or other fixed, floating marker that is fastened well below the waterline. This method is secure only as long as

nobody moves the buoy. Buoys are generally inspected and repainted every 6 months or so. Planners must determine the inspection schedule before selecting a buoy for mooring.

XLIX. ***Line-to-Shore Mooring***

D-92. Line-to-shore mooring uses a line run from a weighted container to an immovable object along the shore. The emplacer must bury or otherwise conceal the section of line that extends from the shore to the container when using this method.

L. ***Spiderweb Mooring***

D-93. Spiderweb mooring uses several mooring cables that attach to the container and radiate to anchors around it, forming a web. The container must have enough buoyancy to lift the cables far enough off the bottom for emplacers to readily secure it by grappling. Emplacers must locate the site exactly at the time of emplacement by visual sightings to fixed landmarks in the water or along the shore using several FRPs to establish a point where two sighted lines intersect. The recovery party locates the site by taking sightings on the reference points when they engage a mooring cable by dragging the bottom while diving. This method of mooring is the most difficult to recover. Emplacers can only use this method in bodies of water with smooth bottoms firm enough for dragging. Planners should also ensure the water at the site is not too deep, cold, or murky for diving.

LI. ***Structural Mooring***

D-94. Structural mooring uses a retrieval line run from the weighted container to a bridge pier or other solid structure in the water. The emplacer must fasten this line well below the low-water mark.

LII. Essential Data for Submersion

D-95. Whatever method of mooring planners designate, they must carefully consider certain data before designing a submersible cache. If planners overlook any of the critical factors in the following paragraphs, they are likely to lose the cache.

LIII. ***Buoyancy***

D-96. Many containers are buoyant even when filled. If the contents do not provide enough weight to submerge and secure the container in place, the emplacer must attach enough weight to the container to accomplish this. Table D-1 shows the approximate weight necessary to attain zero buoyancy.

Table D-1. Zero buoyancy chart

Zero Buoyancy Guide		
Container Dimensions (Inches)	**Empty Container Weight (Pounds)**	**Approximate Weight to Attain Zero Buoyancy (Pounds)**
7 x 9 x 8 1/2	5	15
7 x 9 x 16 1/2	8	31
7 x 9 x 40	16	77
7 x 9 x 45	17 1/2	88
7 x 9 x 50	19	97

D-97. The previous table utilizes several stainless steel container sizes. Soldiers can calculate the weight necessary to attain zero buoyancy for any container if they know the displacement of the container and the gross weight of the container and its contents. Planners find this calculation useful for designing anchors, but it should not be relied upon for actual emplacement. To avoid hurried improvisation during emplacement, emplacers should always test buoyancy in advance by actually submerging the weighted container. This test determines only that a submerged cache will not float to the surface. Emplacers may need to attach additional weight to keep the container from drifting along the bottom. As a rule, the emplacer should add at least 1/10th of the gross weight required to sink the container and even more weight if strong currents exist in the area.

LIV. ***Submersion Depth***

D-98. Planners must first determine the submersion depth of the container to calculate the water pressure that the container must withstand. The greater the depth, the greater the danger that water pressure will crush the container. For instance, the standard stainless steel burial container buckles at a depth of approximately 4.3 meters. The difficulty of waterproofing also increases with depth. Thus, planners should only use the minimum depth necessary to avoid detection. Generally, 2.2 meters is the maximum advisable depth for caching. If seasonal or tidal variations in the water level require deeper submersion, planners should test the container by actual submersion at the maximum depth it must withstand.

LV. ***Depth of the Water***

D-99. Emplacers must accurately measure the water depth at the emplacement point. If planners design the cache to rest on the water bottom, this depth is the same as the submersion depth. Planners may design the container for suspension some distance above the bottom, but the emplacer must know the depth of the water to determine the length of moorings connecting the container to the anchors.

LVI. ***High- and Low-Water Marks***

D-100. Emplacers must estimate any tidal or seasonal changes in the depth of the water as accurately as possible. They must consider the low-water mark to ensure that low water will not expose the cache. Emplacers must also consider the high-water mark to ensure that the increase in depth will not crush the container or prevent recovery.

LVII. ***Type of Bottom***

D-101. Emplacers should probe as thoroughly as possible the bed of the lake or river near the cache. If the bottom is soft and silty, the cache may sink into the muck, become covered with sediment, or drift out of place. If the bottom is rocky or covered with debris, the moorings may become snagged. Any of these conditions may make recovery very difficult.

LVIII. ***Water Motion***

D-102. Emplacers should consider tides, currents, and waves because any water motion will put additional strain on the moorings of the cache. Moorings must be strong enough to withstand the greatest possible strain. If the water motion tends to rock the cache, emplacers must take special care to prevent the moorings from rubbing and fraying.

LIX. ***Clearness of the Water***

D-103. When deciding how deep to submerge the cache, emplacers must first determine how far the cache can be seen through the water. If the water is clear, emplacer may need to camouflage the container by painting it to match the bottom. (Emplacers should always paint shiny metallic fixtures a dull color.) Very murky water makes recovery more difficult.

LX. ***Water Temperature***

D-104. Planners must consider seasonal changes in the temperature of the water. Recovery may be impossible in the winter if the water freezes. Planners should determine as accurately as possible, the dates when the lake or river usually freezes and thaws.

LXI. ***Saltwater***

D-105. Since seawater is much more corrosive than fresh water, personnel should not use tidal estuaries and lagoons for caching unless they are conducting a maritime resupply operation. Maritime resupply operations involve temporarily submerging equipment along the seacoast until a shore party can recover it.

CONCEALMENT

D-106. There are many ways to conceal a cache in natural or ready-made hiding places. For instance, if a caching party was hiding weapons and ammunition in a cave and was relying entirely on natural concealment, the emplacement operation would entail simply locating the site. The party would only need paper, a pencil, and a flashlight. However, if the party was sealing a packet of jewels in a brick wall, it would require a skilled mason, his tools, and a supply of mortar expertly mixed to match the original brick wall.

D-107. When considering concealment, planners must know the local residents and their customs. During the actual emplacement, the caching party must ensure no one observes the operation. The final sterilization of the site is especially important since a concealment site is usually open to frequent observation.

LXII. CACHING COMMUNICATIONS EQUIPMENT

D-108. As a rule, planners should include all equipment for a particular purpose (for example, demolitions or survival) in one container. Some equipment, however, is so sensitive from a security standpoint that personnel should pack it in several containers and cache them in different locations to minimize the danger of discovery by the enemy. This is particularly true of communications equipment since, under some circumstances, anyone who acquires a whole RT set with a signal plan and cryptographic material could play back the set. This is an especially dangerous type of penetration. With this in mind, personnel should never place the signal plan and the cryptographic material in the same container. Ideally, personnel should distribute a communications kit among three containers and cache the containers in different locations. An example of the distribution is as follows:

- Container one could hold the RT set.
- Container two could hold the signal plan and operational supplies for the RT operator, such as currency, barter, and small arms.
- Container three could hold the cryptographic materiel.

D-109. When personnel use several containers for one set of equipment, they must place the containers far enough apart so that the discovery of one does not lead to the detection of the others in the immediate vicinity. However, they should place the containers close enough together so that they can conveniently recover all three containers in one operation. The distance between containers will depend on the particular situation, but they should be at least 10 meters apart. Personnel ordinarily use one final reference point for a multiple cache. The caching party should avoid placing multiple caches in repeating patterns, which could lead to the discovery of one multiple cache-causing the enemy to probe for other similarly placed caches.

LXIII. CACHING MEDICAL EQUIPMENT

D-110. Planners must perform a feasibility study to determine the need for caching medical supplies. The purpose of medical caches is to store excess medical supplies to maintain mobility and deny access to the enemy. In addition, caching large stockpiles of medical supplies allows the force to position vital supplies in advance of planned operations.

LXIV. CACHE REPORT

D-111. The final step vital to every emplacement operation is the preparation of a cache report. This report records the data essential for recovery. The cache report must provide all of the information that someone unfamiliar with the locality needs to find his way to the site, recover the cache, and safely return. The purpose of the report is to point out the minimum-essential data. The importance of attention to detail is the critical aspect of the cache report. A careless error or omission may prevent recovery of the cache when personnel need it.

CONTENT

D-112. The cache report must include instructions for finding and recovering the cache. It should also include any other information that will ease the planning of a recovery operation. Because the details will depend upon the situation and the particular needs of each organization, the exact format of the report may vary slightly.

PROCEDURES

D-113. The observer should collect as much data as possible during the personal reconnaissance to assist in selecting a site and planning emplacement and recovery operations. It is advisable that the observer draft the cache report before the emplacement operation. Following these procedures will reveal omissions. In this way, personnel can then obtain the missing data at the site. This procedure reduces the preparation of the final cache report to an after-action check. This check ensures that personnel actually placed the cache precisely where the observer planned and that all other descriptive details are accurate. Although personnel may not always accomplish this ideal, they must always observe the following two procedures:

- The caching party should complete the final cache report as soon as possible after emplacement while details are fresh in mind.
- A person who has never visited the site should check the instructions by using them to find the site. When no such person is available, the site should then be visited shortly after emplacement, provided it can be done securely. If personnel emplaced the cache at night, a visit to the site in daylight may also provide an opportunity to check on the sterilization of the site.

LXV. CACHE RECOVERY

D-114. Practical exercises, equipment, a sketch of the site, preliminary reconnaissance, a probe rod, and site sterilization are all components of successful cache recovery. The following paragraphs discuss these components for recovery operations.

PRACTICAL EXERCISES

D-115. If planners can arrange secure field exercises, they should ensure all possible recovery team members get experience recovering actual dummy caches. It is especially desirable for the recovery person to master pinpointing techniques. Personnel achieve mastery when they practice selecting points of emplacement, drafting recovery instructions, and following recovery instructions.

EQUIPMENT

D-116. Although the equipment used in recovery is generally the same as that used in emplacement, it is important to include any additional items that may be required in recovery in the cache report. A probe rod may not be essential for emplacement, but it is necessary to have some object roughly the same size as the cache container to fill the cavity left in the ground by removal of a buried cache. Some sort of container of wrapping material may be needed to conceal the recovered cache while it is being carried from the cache site to a safe house. Recovery of a submerged cache may require grappling lines and hooks, especially if it is heavy.

SKETCH OF THE SITE

D-117. If possible, the observer should provide the recovery person with sketches of the cache site and the route to the cache site. If the recovery person must rely exclusively on verbal instructions, as in the case when communications are limited to RT messages, he should draw a sketch of the site before starting on the recovery operation. He should use all the data in the verbal instructions to make the sketch as realistic as possible. Drawing a sketch will help to clarify any misunderstanding of the instructions. In addition, personnel can follow a sketch more easily than verbal instructions. It is also helpful for the recovery person to draw a sketch of the route from the immediate reference point to the site. The observer should not carry this sketch on his person, because if the enemy apprehends him, the sketch might direct the enemy to the cache.

PRELIMINARY RECONNAISSANCE

D-118. It is advisable that the observer check the cache location instructions, especially when the recovery team must perform under stringent enemy controls or with no extra time to search for the location. Careful analysis of the best available map can minimize reconnoitering activity near the cache, which reduces the danger of arousing suspicion. If the recovery team must operate at night, the team should first find the cache during daylight and place an unnoticeable marker directly over it as a visual reference.

PROBE ROD

D-119. The recovery person can avoid digging at the wrong spot by using a probe rod before starting to dig. He should push and turn the probe rod into the ground by hand, so that it will not puncture the cache's container. The recovery person should never pound the probe rod with a hammer.

D-120. The recovery procedure is the same as for the burial, except for the following two points: the recovery person–

- Should never use a pickax for digging because it might puncture the container and damage the cached items.
- May need to fill the hole with other objects in addition to soil after he removes the cache.

D-121. Sometimes it is possible for the recovery person to fill the hole with rocks, sticks, or other readily available objects at the site. If the recovery person does not find filler objects during his preliminary reconnaissance, he should carry an object roughly the size of the cache to the site during recovery.

STERILIZATION OF THE SITE

D-122. As with emplacement, the recovery person must perform the recovery operation without leaving any trace of the operation. Although sterilization is not as important for recovery as for emplacement, the recovery person should perform sterilization as thoroughly as time permits. Evidence of a recovered cache may alert the enemy to clandestine activity in the area and provoke countermeasures.

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