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Bosnia Air Drop Study

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PREFACE

This document was prepared by the Institute for Defense Analyses (IDA) for the Deputy Assistant Secretary of Defense for Peacekeeping and Humanitarian Affairs, Office of the Assistant Secretary of Defense (Special Operations and Low Intensity Conflict) in partial fulfillment of the task "Effectiveness of Humanitarian Air Drop Operations." The objective of this effort was to provide a description and analysis of the various phases, locations, and costs of the U.S. portion of the humanitarian air drop operations in Bosnia during Operation Provide Promise in 1993-94.

IDA would like to thank the following organizations for their contributions to this study: Headquarters, U.S. European Command (EUCOM); the Joint History Office, Office of the Chairman, JCS; the Capabilities Assessment Division, Air Force Studies and Analyses Agency; two former chiefs of staff of Joint Task Force Provide Promise, who agreed to be interviewed; the Office of U.S. Foreign Disaster Assistance (OFDA); the Office of Food for Peace, U.S. Agency for International Development; the United Nations World Food Programme (WFP); the United Nations Department of Peacekeeping Operations (DPKO); and the United Nations High Commissioner for Refugees (UNHCR). UNHCR generously made available important documents, as well as staff for interviews.

The IDA Technical Review Committee was chaired by Mr. Thomas P. Christie and consisted of ADM Leighton Smith, USN (Ret.), MG William Farmen, USA (Ret.), Mr. Dayton Maxwell, and Mr. Shawn Messick.

BOSNIA AIR DROP STUDY

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EXECUTIVE SUMMARY

INTRODUCTION

Both civilian relief organizations and military forces have employed humanitarian air drops to deliver relief supplies. Although not a common method of delivering assistance, air drop operations have been employed in recent years in diverse settings, creating a practical database on the role of air drops in humanitarian missions.

The U.S.-led effort to supply besieged Bosnian enclaves in 1993-94, part of Operation Provide Promise, is an important case study of this humanitarian delivery method. In one of the largest humanitarian air drop operations ever attempted, U.S. and allied aircraft flew 2,735 sorties. The operation took place within an extraordinarily complex political-military environment, with multiple international agencies involved. The model selected for managing the air drop operations – combined military forces supporting an international assistance organization, the United Nations High Commissioner for Refugees (UNHCR) – provided a number of lessons learned for future operations.

Air drops will almost certainly be requested in future humanitarian assistance operations, despite ongoing debate about relative costs and benefits of such methods. The dichotomy between the potential of air drops on the one hand and their shortcomings on the other requires additional investigation to benefit policymakers and planners in future humanitarian operations. It was this background that established the requirement to assess the air drop portion of Operation Provide Promise (OPP) in Bosnia.

This study provides a description of the U.S. portion of OPP air drops, and an analysis of the effectiveness of those operations. The study provides DoD with information to make policy decisions on whether air drop operations should be undertaken, and furnishes specific considerations for planners of future air drop operations. This study attempts to provide a clear understanding of what happened during the Bosnia air drops, including the organizations involved; requirements determination; assembly and preparation of supplies to meet the requirements; supplies dropped; phases of the mission; locations; tonnage; impact on the local population;

budget; and other operational factors. It examines the costs and benefits of the mission, as well as shortcomings, problems and successes.

This study also examines, more briefly, other recent air drop operations. Comparing these missions with OPP leads to a clearer understanding of which factors were unique to Bosnia, and which are recurring issues in humanitarian air drops, in general.

This study consists of five chapters, plus this Executive Summary, Introduction, and two appendices. Chapters I and II serve as the empirical core of the report. Chapter I provides background on the conflict in Bosnia and the humanitarian conditions that impelled the air drops. Chapter II describes the air drop operations during the 1993-94 period. Chapter III analyzes the results of the operation, taking into account the political, military and environmental factors that shaped the mission. Chapter IV examines recent humanitarian air drops other than Bosnia, in order to compare and contrast OPP with missions in other environments. Operations in Somalia, northern Iraq, and Sudan are examined. Chapter V distills a list of considerations that policymakers and planners are likely to face in humanitarian air drop operations. Chapter V also recommends, in the form of analytical frameworks, procedures that DoD might utilize when considering future air drop operations.

Appendixes A contains the abbreviations and acronyms used in the study. Appendix B contains a bibliography of material that supports the analysis.

CHAPTER I: THE BOSNIAN ENVIRONMENT

A. Overview of Conditions in Bosnia-Herzegovina, 1993-94

The 1993-94 stage of the Bosnian conflict was a period of relative stasis on the battlefield, and ongoing humanitarian crisis. Civilians of all ethnic groups continued to face "ethnic cleansing" – ethnically based brutality and deprivation. The interplay of military operations, ethnically uniform local population concentrations, and the rugged terrain of Bosnia resulted in the formation of several "enclaves" besieged by opposition military forces. These enclaves, which would later become the targets for air drops, generally contained Muslim civilians and military forces.

Throughout this period of the war, the international community sought workable diplomatic solutions to the Bosnian conflict. Meanwhile, a range of international organizations, led by the UNHCR, attempted to alleviate the humanitarian crisis on the

ground. A chronology of significant diplomatic, military, and humanitarian events during this period is provided in the text.

International civilian relief agencies encountered significant impediments to their operations throughout the 1993-94 period, including threats to the road convoys that supplied 70 percent of donor-supplied food assistance. By far the greatest challenge to vehicular delivery was the resistance of armed factions to humanitarian convoys delivering supplies to opposition groups. Obfuscation, threats, blockades, and direct attacks faced civilian relief workers during this timeframe. Of special note, the United Nations (UN) had adopted an explicit policy of "consent" as to the delivery of humanitarian supplies in Bosnia. That is, although the UN would advocate strenuously for the delivery of assistance to the needy, it would, consistent with the nature of a peacekeeping mission, seek the consent of factions controlling humanitarian transit routes.

B. Target Populations and Their Needs

OPP air drops focused on twelve locations that shared common characteristics: factional conflict isolated these areas, making road access difficult, and resulting in deprivation for civilian populations. Relief organizations working in Bosnia in 1993-94 identified the following categories of recurring material needs facing civilians:

- Food
- Safe drinking water
- Energy supplies
- Medical supplies
- "Winterization" material (warm clothing, shoes, blankets, bedding, stoves, fuel for stoves, candles)
- Emergency shelter materials
- Seeds (to enable civilians to grow some of their own food).

The enclaves that were targets for air drop operations varied in important ways that had implications for planning air drops to the pockets. Significant differences were:

- **The degree of isolation**: Several enclaves were virtually cut off from the outside; others had more or less porous boundaries
- **The "coping capacity" of residents**: Certain enclaves retained limited medical services, agricultural production and access to potable water; others were almost totally dependent on outside assistance

- **The level of military activity**: The degree to which the enclaves were under attack varied substantially among locations and, over time, within locations
- **Threat posed by anti-aircraft defense systems**: Anti-aircraft defenses around most pockets were rated "minimal;" the Bihac pocket, however, contained a significantly more sophisticated threat to aircraft and crews conducting air drop operations.
- **International presence**: Certain enclaves had international observers within their boundaries to monitor relief deliveries; others had no permanent presence, and only rare visits during the period of air drop operations.
- **Ethnic composition**: Most of the enclaves sheltered Bosnian Muslim populations; some contained minorities from other ethnic groups. The presence of minorities may have shaped the tactics of besieging forces.
- **Size**: The Bihac area measured approximately 45 kilometers by 25 kilometers; other enclaves were only a few kilometers across.
- **Nature and capacity of local authorities**: Some authorities equitably distributed supplies; others were accused of profiteering. The percentage of relief supplies diverted to Bosnian military purposes also varied significantly from enclave to enclave.

C. Considerations Leading to a Decision on Air Drops in February 1993

By January 1993, several factors interacted to create momentum for air drops. There was a clear-cut recognition of widespread human suffering. Frustrated by their failure to increase road delivery of supplies, UNHCR officials were open to alternative techniques – even "extreme" measures like air drops – to reach conflict victims.

Also, U.S. government interest in the enclaves increased noticeably in early 1993 as the incoming Clinton Administration conducted an intense review of American policy, with an eye to doing more in Bosnia. A complex and sometimes contentious interagency policy process resulted in a policy package that included air drops. Another factor leading to air drops was the design by U.S. military planners of a concept of operations that made air drops acceptable. The choice of medium altitude air drops at night lessened force protection concerns for the Administration.

Even as air drop planning went forward, a number of additional considerations impinged on the decision process. These concerns would continue to shape the conduct of Bosnia air drop operations:

- The uncertain response of besieging forces
- Concerns within DoD with defining the "end-state" for the operation

- Ambivalent initial relations with the UN and its component entities
- Ongoing debate about the effectiveness and implications of an air drop policy.

CHAPTER II: AIR DROP OPERATIONS IN BOSNIA

A. Concept of Operations; Units Providing Air Drop Support

The concept of operations for OPP air drops was straightforward in design, if complex in implementation. Requests for humanitarian assistance were generated by the UNHCR, and transmitted to the headquarters of Joint Task Force Provide Promise (JTFPP), which made the decision to proceed. JTFPP transmitted its decision to the subordinate U.S. Joint Forces Air Component Command (JFACC), which exercised Tactical Control (TACON) over the U.S. Air Force 435th Air Wing (AW), equipped with C-130s and stationed at Rhein-Main Air Base, Germany. The 435th AW executed the air drop missions into Bosnia. French and German C-160 aircraft joined the operation on some of the missions. This concept of operations is illustrated in Figure ES-1.

B. Command and Control; Coordination

Figure ES-2 illustrates the command and control structure for the operation. Outside the core military command and control architecture, the international and multinational nature of the operation resulted in the creation of additional coordination mechanisms, also noted in Figure ES-2.

C. Technical Aspects of Provide Promise Humanitarian Air Drops

OPP, with its confluence of intransigent political-military factions, the presence of serious anti-aircraft threats, and low tolerance for aircrew losses, transformed the otherwise relatively simple air drop process into a formidable military and technical challenge to the U.S., German, and French aviators tasked with the mission. The ultimate success of the air drop operation hinged on both the technical capabilities of the air drop aircraft and the innovative tactics developed by the air and ground crews tasked with the mission.

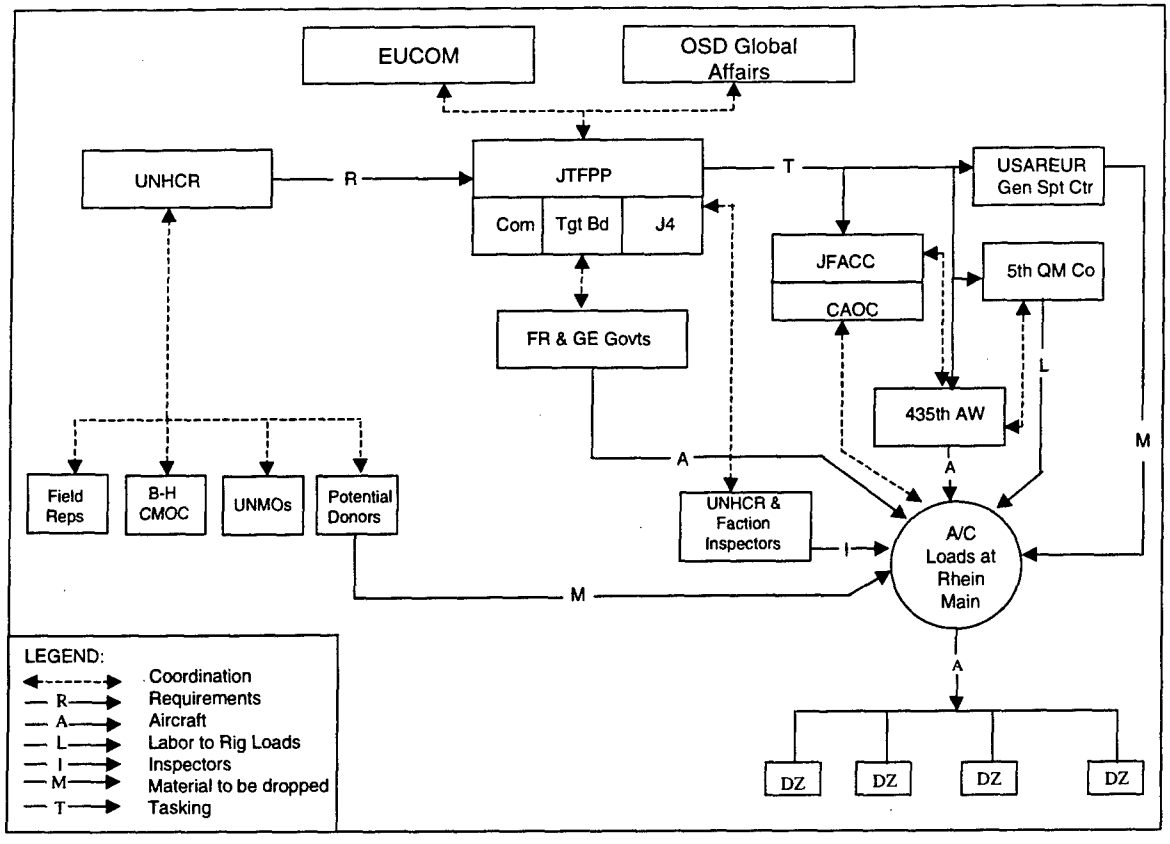

Figure ES- 1. Bosnia Air Drop Concept of Operations

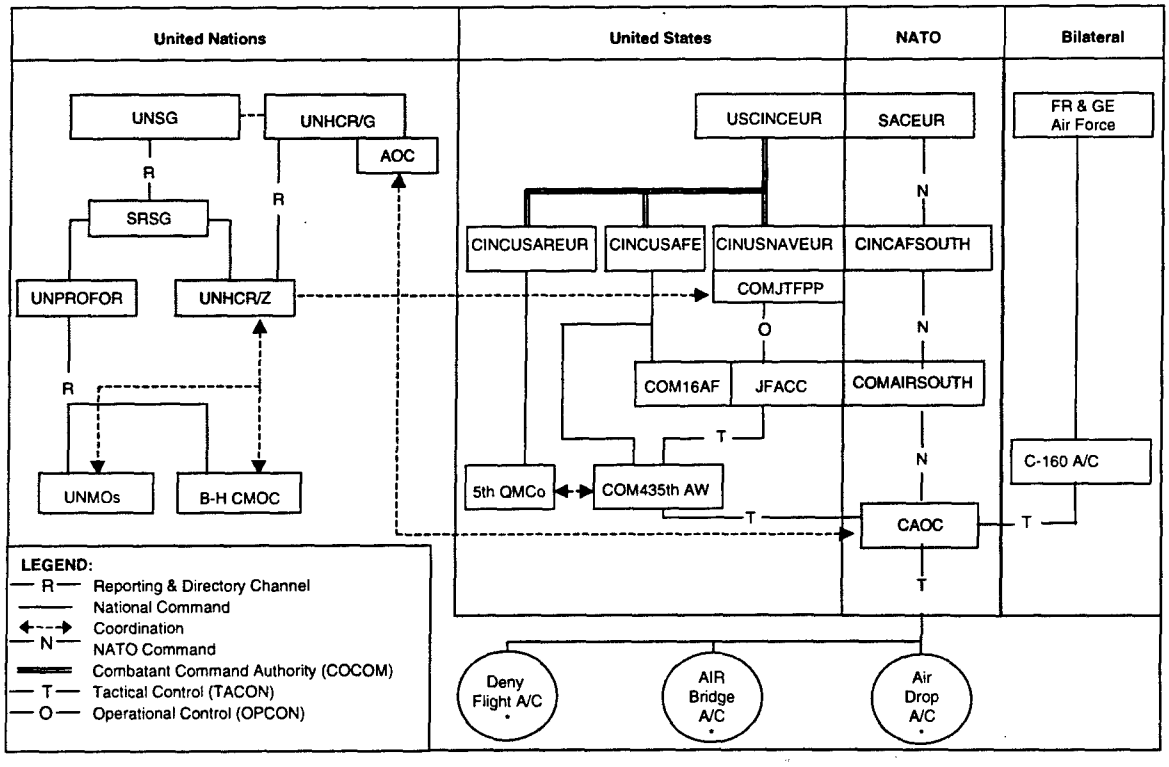

Figure ES- 2. Bosnia Air Drop Command and Control

The air drop tactics developed and employed for OPP – nighttime deliveries from altitudes of no less than 10,000 ft. AGL – placed great stress on the ability to hit the desired drop zone accurately. Only C-130s equipped with adequate defensive systems were allowed to participate, and substantial support assets were always available for monitoring or assisting the air drop aircraft.

The following technical aspects of OPP air drops are discussed in the text:

- Air drop mission tactics for threat avoidance
- Aircraft flight profiles
- Support assets
- Equipment for Accurate Air Drop Delivery
  - Air Drop Aircraft
  - Air Drop Bundles
  - Essential Mission Systems for Air Drop Aircraft
  - Other Systems and Tactics.

D. Description of Cargo

U.S. and allied aircraft dropped four main categories of relief supplies during OPP: food, medical supplies, winterization material, and seeds. Food was by far the largest category of air dropped supplies and consisted of two categories: bulk food, and pre-packed individual meals, such as meals-ready-to-eat (MREs).

E. Phases of the Operation

Air drop operations began 28 February 1993 and ended 19 August 1994. The operations can be subdivided into four phases: Start-up, Fully Operational, Intensified Operations, and Phase-down. The phases reflect shifts in targets, cargo, capabilities and other elements that affected OPP operations.

F. Cost of Air Operations

Air drops are generally considered the most costly method of delivering relief supplies. The actual per-ton cost during air drop operations depends on numerous variables, including distance flown, type of aircraft, method of drop, required logistics "tail," and other factors. In Bosnia, the cost per ton of relief supplies air dropped into the enclaves can only be approximated, since cost data were kept in a number of formats

during the period of operations. Using estimating techniques, a delivery cost per ton of approximately $2,800 can be computed. Given the uncertainty about whether all costs of the air drops were captured in available data, the $2,800 cost per ton should probably be viewed as a low-end estimate. To place this estimate in perspective, ongoing World Food Programme air drop deliveries into southern Sudan – considered by relief experts to be a very high cost operation – cost about $800 to $1,000 per ton delivered. In general, air drops are estimated to cost three to four times more than similar deliveries by truck.

CHAPTER III: EVALUATION OF OPERATION PROVIDE PROMISE AIR DROPS

A. Assessment of the Impact on Target Populations

This study finds that U.S. air drops into the Bosnian enclaves significantly aided the target populations in specific enclaves, both materially and psychologically. As to meeting the material needs of Bosnian civilians, OPP air drop assistance was limited but important (18,000 metric tons out of a total estimated need of 532,000 metric tons of food aid between February 1993 and April 1994). Air drops materially assisted in two ways.

- Air drops added an important increment to the total quantity of supplies reaching the enclaves in 1993-94 during those intervals when air drops were the only method of delivering assistance.
- In at least some instances, air drops may have altered the local political environment enough to result in increased access for road convoys.

Although there were no documented cases of death by starvation in Bosnia during the period of air drops, it seems likely (but cannot be proven) that the air-dropped increment of supplies actually prevented some starvation deaths in the areas targeted. The air drops did reduce human suffering from hunger, cold, illness, trauma, and deprivation.

Besides directly aiding civilians, air drops may have indirectly benefited those trapped in enclaves by increasing access for road convoys, in certain limited instances. Available data suggest that air drops may have facilitated convoy access to specific enclaves for specific time periods, without altering the overall Bosnian Serb strategy of isolating and besieging Muslim enclaves.

Although the psychological impact of air drops defies precise measurement, observers indicate that the impact was immediate, sustained, positive, and important. Air drops provided an assurance to enclave residents that the outside world was aware of their plight and willing to assist in some way.

B. Assessment of the Delivery Process

By one measurement – the safety and protection of U.S. air crews – the air drop delivery process was an unqualified success. During the course of the 18-month operation, not a single casualty was incurred and not a single aircraft was damaged. In terms of getting supplies on the ground, the delivery process can also be characterized as successful, within the constraints established by the concept of operations. Creative navigational, communication, and rigging techniques were harnessed to the task. Thousands of metric tons of vital relief supplies were delivered on or close to target, despite technical difficulties and formidable environmental barriers.

One aspect of the air delivery process deserves special focus: the weakness of assessment and monitoring capabilities on the ground. The system linking military planners, humanitarian agencies, and recipients on the ground could have been improved. Essentially, no one had a clear overall picture of how many relief packets were actually getting into the right hands on the ground.

C. Non-Quantifiable Impacts of Operation Provide Promise Air Drops

Beyond the immediate relief impacts, initiation of air drop operations had an impact on the larger political-military environment. An analysis of the political-military context in which air drops took place suggests the following notable, if non-quantifiable, impacts:

- Air drops created a perception of U.S. leadership in Bosnia.
- JTFPP operations focused, at least initially, U.S. public attention on the Bosnia Crisis.
- The air drops continued a slow process of the U.S. government tilting toward the Muslim perspective in the Bosnian conflict.
- The air drops served as a dramatic symbol of U.S. military capability.
- U.S. air drops had an impact on morale in Bosnia, beyond the enclaves themselves.
- Air drops generally contributed to the defense of the militarized Bosnian enclaves.
- Viable coordination mechanisms were developed to link the UN's leadership of humanitarian operations with military command and control systems.

In addition to these impacts, events in the two enclaves receiving the earliest air drops – Cerska and Konjevici – deserve careful analysis by air drop planners, since both

towns fell to attackers within days after air drops began, in the order in which they received humanitarian air drops. Moreover, despite the general perception that the air drops equated with increased U.S. engagement in the Balkans, the decision to select the air drop option may have entailed opportunity costs, to the extent that air drops substituted for more aggressive efforts to open overland access to besieged populations.

D. Problems Encountered

Operating in the midst of a brutal civil war, and constrained by numerous political, military and logistics guidelines, OPP faced problems in Bosnia, including:

- The level of need within the enclaves was difficult to determine.
- Key staff personnel were unavailable to Joint Task Force Provide Promise (JTFPP).
- Coordination between the U.S. military and civilian agencies was initially difficult.
- Air drop accuracy could have been improved.
- Certain categories of needs, such as diesel fuel, were not met with air drops.
- The air drops caused some collateral damage and casualties.
- There were significant problems distributing air dropped supplies within the enclaves.
- Inappropriate cargo, including outdated medical supplies, was sometimes pushed into the air drop system.
- Shortages in air drop equipment, like parachutes, constrained operations.
- An unclear end-state affected mission planning.

CHAPTER IV: OTHER RECENT AIR DROP OPERATIONAL EXPERIENCE

Chapter IV briefly examines three humanitarian operations, each of which made use of air drops: the Somalia flood relief effort in 1997-98; Operation Provide Comfort, the U.S. re-supply of Iraqi Kurdish refugees in 1991; and, the World Food Programme air drops in Sudan, beginning in 1992 and continuing today. Somalia provides an example of a humanitarian mission following a natural disaster, with limited conflictive elements. Operation Provide Comfort is a case when air drops were used as a transitional tactic within a larger humanitarian strategy. Sudan illustrates a UN-managed operation in a conflict zone with characteristics different from Bosnia. Air drops were arguably justified in all three instances, although for a different reason in each case.

CHAPTER V: AIR DROP POLICY AND OPERATIONAL CONSIDERATIONS

A. Five Key Policy Factors

Analysis of air drops in Bosnia, and comparison of those operations with other recent air drops, suggest five key policy factors that should shape DoD decisions on whether to commence air drops, and how the air drops should be configured. These factors are:

- Condition of the target population, including its capabilities and vulnerabilities
- Consistency with overall humanitarian strategy
- Feasibility of alternative delivery or other humanitarian options
- Availability of air resources to conduct operations, factoring in the threat to aircraft and crews
- Impact of air drop operations on the larger political-military environment.

Table ES-1 illustrates how the five policy factors relate to decisions whether to initiate humanitarian air drops:

Table ES- 1. How the Five Policy Factors Relate to Air Drop Decisions

POLICY FACTORS	No ◄——————————► Go	
Condition of target population including ability to distribute	INAPPROPRIATE	APPROPRIATE
Consistency with overall humanitarian strategy	NOT CONSISTENT	CONSISTENT
Alternative delivery or other humanitarian systems	FEASIBLE	UNFEASIBLE
Air resource availability	UNAVAILABLE	AVAILABLE AT ACCEPTABLE COST
Impact on political-military environment	NEGATIVE	POSITIVE

B. Recommended Analytical Frameworks

Air drops are neither inherently good nor inherently bad humanitarian tactics. Careful analysis of the specific operational setting – from conditions among the target population to the broader political-military milieu – determines whether air drops are the preferred option and, if so, whether U.S. military aircraft should carry them out. Air

drops are often the costliest option per unit delivered. On the other hand, air drops may be the only viable option in difficult relief environments, skewing normal cost-benefit equations.

Recent operational experience suggests that a set of core policy issues recurs when the air drop option is under consideration. The recurrence of these core policy issues suggests a systematic series of questions that policy-makers and planners confront. The decision whether to use air drops as a humanitarian intervention follows a logical, if often implied, sequence of these questions. This study recommends the systematic organization of these recurring questions into analytical frameworks that can guide decision processes.

The *Analytical Framework for Assessing the Utility of Air Drops,* displayed in Chapter V, is one such framework. Its purpose is to guide decisions on whether U.S. military air drops make sense in a specific humanitarian operation. In this analytical framework, the answers to a series of questions lead to decisions by policymakers to: (1) pursue the air drop option; (2) consider air drops along with other delivery options; (3) move to alternative relief strategies; or, (4) take no action at this time. Units planning for executing air drops face another series of questions based on an ongoing assessment of the mission. The *Analytical Framework for Managing Air Drop Operations*, displayed in Chapter V, provides one framework for designing effective air drop plans, based on lessons learned from Bosnia and other operations, and for determining when operations should be discontinued. In this analytical construct, the answers to a series of questions determine whether: (1) the air drop plan should go forward as currently configured; (2) the air drop plan should be re-assessed; (3) the plan should be modified; or, (4) the air drops should be terminated.

CONCLUSION

OPP air drops were a significant humanitarian operation. Conducted under difficult conditions, they helped reduce human suffering in target areas, and provided an important psychological boost to innocent victims of the Bosnia conflict. Perhaps the most important legacy of OPP is the recognition that humanitarian air drops can be an effective component of a multi-faceted relief strategy. A useful by-product is a rich collection of lessons learned, from which analytical frameworks can be distilled to guide future operations.

INTRODUCTION

INTRODUCTION

A. BACKGROUND

Both civilian relief organizations and military forces have employed air drop operations, in selected situations, to deliver emergency supplies in humanitarian operations. Although not a common method of delivering relief assistance, air drop operations have been employed in several locations in recent years. In addition to Bosnia, operations in Northern Iraq, Somalia, Ethiopia, Sudan and other settings have established a practical database on the role of air drops in humanitarian missions.

Analyses of prior air drop operations are crucial to understanding when, or whether, this technique should be applied in future operations. The ongoing, if only periodic, use of air drops suggests that these operations have become a part of the tool kit of emergency interventions available to the international community. Yet air drop operations are seldom conducted without serious questions about their effectiveness and relative cost.

The U.S.-led effort to supply besieged Bosnian enclaves in 1993-94, part of Operation Provide Promise (OPP) conducted by the U.S. European Command, is an important case study of this delivery method. One of the largest and most complex air drop operations ever attempted, OPP dispatched 2,735 sorties over an 18-month period.[1] The operation took place within an extraordinarily complex political/military environment, with United Nations (UN) peacekeeping forces, UN civilian organizations, the North Atlantic Treaty Organization (NATO), important bilateral actors, three Bosnian factions, and dozens of international non-governmental organizations (NGOs) operating in an ethnically fractured region, during a violent conflict, under close scrutiny from U.S. and international media.

Operation Provide Promise also tested civilian-military cooperation during humanitarian assistance operations within complex emergencies. The model selected for managing the air drop operations – combined military forces supporting an international

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[1] *Joint Task Force Provide Promise Command Chronology*, p. II-D-8. U.S. aircraft were responsible for 2,117 of these sorties, while French and German aircraft provided 618 sorties.

assistance organization, the United Nations High Commissioner for Refugees (UNHCR) – provided a number of "lessons learned" for future operations. In addition, OPP serves as a useful case study of how the effectiveness of air drops can be evaluated. Because civilian populations were trapped in isolated, besieged enclaves, organizations conducting relief operations faced severe impediments in determining whether intended beneficiaries actually received the food and medical assistance that was provided.

Historically, air drops have been employed in humanitarian operations when no alternatives were available. Many relief agencies believe that standard systems for delivering emergency supplies – overland (truck), sea-borne, air bridge (air landed delivery), local purchase, or use of commercial channels (traders and merchants) – are less costly than air drops, are capable of delivering more cargo per load, or better utilize local capacity.

Other concerns are that air drops (absent supplementary operations on the ground) permit little analysis of what is happening in the drop zones once the cargo leaves the aircraft. During air drop operations, relief agencies may have limited information on whether intended beneficiaries are actually receiving assistance, or whether cargo is subject to theft, hoarding, or diversion to armed factions. For these reasons, air drop operations are considered only when severe weather, attacks on overland delivery routes, or other barriers block standard techniques.

The use of air drops is promoted, on the other hand, by those who argue that this method contributes measurably to humanitarian programs. Among the advantages cited by supporters are: the ability to reach needy populations isolated by conflict, weather, or destruction of infrastructure; the speed with which supplies can be delivered; in conflict situations, the additional security afforded relief workers and supporting military units by avoiding warring factions on the ground; the opportunity to deliver supplies directly to target communities without a time-consuming "hub and spoke" convoy distribution system; and the highly visible nature of air drop operations, which can provide a psychological boost to recipients and to public opinion.

The Department of Defense (DoD) has air-dropped humanitarian assistance to Iraqi Kurds fleeing toward Southeastern Turkey in 1991 (Operation Provide Comfort), as well as to Bosnians. Both Provide Comfort and Provide Promise offer useful insights into the cost and benefits of air drop operations. In addition, both operations suggest how DoD involvement, which by its nature introduces significant military assets into the theater, can have far-reaching influences on the larger political-military environment.

Air drops will almost certainly be requested in future humanitarian assistance operations, despite the ongoing debate about relative costs and benefits. The dichotomy between the potential of air drops, on the one hand, and their shortcomings, on the other, requires additional investigation to benefit policymakers, planners and providers in future humanitarian operations. It was this background that established the requirement to assess the air drop portion of Operation Provide Promise in Bosnia.

B. PURPOSE

This study provides a description of the U.S. portion of the humanitarian air drop operations in Bosnia during Operation Provide Promise, and an analysis of the effectiveness of those operations. The study provides DoD with information to make policy decisions on whether air drop operations should be undertaken, and furnishes specific considerations for planners of future air drop operations, should they be undertaken.

C. SCOPE

In terms of subject content, this assessment covers a very specific portion of the international community's intervention in Bosnia: the U.S. military air drops of humanitarian supplies into twelve enclaves between 28 February 1993 and 19 August 1994. This study examines the political, military, and humanitarian environments in which the air drop operations were embedded, but focuses primarily on the air drop operations themselves.[2]

This analysis attempts to provide a clear understanding of what happened during the Bosnia air drop operations, including the organizations involved; requirements determination; assembly and preparation of supplies to meet the requirements; supplies dropped; phases of the mission; locations; tonnage; impact on the local population; budget; and other operational factors. It examines the costs and benefits of the mission,

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[2] In addition to the air drop operations, U.S. forces were heavily involved in the parallel "Sarajevo Airbridge" mission. Airbridge humanitarian flights landed at Sarajevo Airport, where cargo was off-loaded for land delivery to the besieged capital. From June 1992 to January 1996, aircraft from sixteen nations flew 12,898 Airbridge sorties, delivering 160,539 metric tons of essential supplies. JTFPP also controlled the US Hospital Zagreb (USHZ), which ultimately grew to a 60-bed facility supporting UNPROFOR and U.S. personnel; Task Force Able Sentry (TFAS), a peacekeeping force tasked with keeping the Balkan conflict from spilling over the Yugoslav/Macedonian border; and, deployment of unmanned aerial vehicles (UAVs) for intelligence gathering in the region. [*Joint Task Force Provide Promise Command Chronology*, pp. I-5 to I-7]

as well as shortcomings, problems and successes. Among the issues discussed is the complex question of metrics – of how analysts can measure the impact of interventions like air drops in which only a portion of the operation is under the control of international agencies.

Also examined, more briefly, are other recent air drop operations. Comparing these missions with Operation Provide Promise leads to a clearer understanding of which factors were unique to Bosnia, and which are recurring issues in humanitarian air drops.

For policymakers facing a decision about whether to employ air drops, this report identifies major issues they will encounter. For example, in Bosnia, as in virtually every humanitarian air drop conducted during military conflict, policymakers will face questions about how to satisfy warring factions that air drops are impartial. In Bosnia, this issue was surmounted to some degree by permitting factions to inspect cargo prior to delivery, and by identifying drop sites in each factional area of control. A number of these key issues are identified in this study as a guide to policymakers.

Planners, as well, are likely to face a set of recurring issues if future air drop operations are undertaken. Therefore a number of such specific considerations are identified. For example, collateral damage and casualties from palletized air drops were problems in the initial stages of Operation Provide Promise. In Bosnia, planners attempted to address these considerations through a combination of changing drop zones and alterations in the packaging of relief supplies. This study also identifies the issue of collateral damage as one of several that planners must consider when configuring future humanitarian air drops.

D. INFORMATION SOURCES

Information sources for this study included:

- Historical documents examining the Bosnia conflict, such as the JTFPP Command Chronology, the Provide Promise USAFE (U.S. Air Force Europe) history, and the IDA report *Lessons and Implications from the U.S. Air Operations in the Former Yugoslavia, 1992-95*
- Reports and publications from organizations directly involved in Bosnia relief operations, such as the United Nations High Commissioner for Refugees (UNHCR), the World Food Programme (WFP), the International Committee of the Red Cross (ICRC), and the Office of U.S. Foreign Disaster Assistance (OFDA)

- Automated searches of selected databases, such as the Joint Universal Lessons Learned System (JULLS) and the archives of the United Nations Department of Peacekeeping Operations
- Review of selected periodicals, including contemporary newspaper accounts, OFDA *Situation Reports*, and professional journals such as the *Quartermaster Professional Bulletin*
- Examination of raw data, such as UNHCR internal reports and messages, transcripts of interviews with Bosnian government officials, and summaries of eyewitness accounts
- Interviews with key informants, including U.S. government officials, employees of international organizations, and researchers investigating the Bosnia relief effort.

These sources are listed in Appendix B, the bibliography for this study.

E. ORGANIZATION OF THE REPORT

This study consists of five chapters, plus an Executive Summary, this Introduction, and two appendices. Chapters I and II serve as the empirical core of the report. Chapter I provides background on the conflict in Bosnia and the humanitarian conditions that impelled planning for the air drops. Chapter II describes the air drop operations conducted by U.S. military forces in Bosnia during the 1993-94 period. Chapter III analyzes the results of the operation, taking into account the political, military and environmental factors that shaped the mission.

Chapter IV looks, much more briefly, at aspects of recent humanitarian air drop operations other than Bosnia in order to compare and contrast elements of Operation Provide Promise with missions in other environments. Drawing on an understanding of Operation Provide Promise and the other air drops, Chapter V distills a list of considerations that policymakers and planners are likely to face. It is intended to serve as a guide during preparation for future air drop operations and, if they are undertaken, to make them more effective. Chapter V also recommends procedures, in the form of analytical frameworks, that DoD might utilize when considering future air drop interventions.

Appendices A and B contain material supporting the analysis. These appendices include the abbreviations and acronyms used in this study, and a bibliography.

CHAPTER I

THE BOSNIAN ENVIRONMENT

I. THE BOSNIAN ENVIRONMENT

A. OVERVIEW OF CONDITIONS IN BOSNIA-HERZEGOVINA, 1993-94

The 1993-94 stage of the Bosnian conflict was a period of relative stasis on the battlefield, and ongoing humanitarian crisis. Although the level of military activity was high, the contending factions generally maintained control over those portions of the country they had gained earlier. The interplay of military operations, ethnically uniform local population concentrations, and the rugged terrain of Bosnia resulted in the formation of several "enclaves" besieged by opposition military forces, shown in Figure I-1, enclaves that would later become the targets for air drops. These enclaves generally, although not exclusively, contained Muslim civilians and military forces.

Civilians of all ethnic groups continued to face "ethnic cleansing" – ethnically based brutality, and deprivation. Typical reports from the 1993-94 period refer to "two middle aged women severely beaten by uniformed men"; "the last four remaining mosques ... blown up"; "one 60 year old man shot to death ... in front of his granddaughter"; "all adult males forced to dig trenches on the front lines"; 5,000 civilians "forced from their homes ... and made to trek across the mountains."[1] In January, 1993 the United Nations High Commissioner for Refugees (UNHCR) counted 1.62 million Bosnians – 40 percent of the total census – among its "beneficiary population." By October 1993, the beneficiary count had risen steadily to 2.74 million, or 67 percent of the populace. In April 1994, as the humanitarian air drops were winding down, the number of beneficiaries receiving international assistance had declined only slightly, to approximately 2.3 million. Of these conflict victims, shown in Table I-1, nearly half had been driven from their homes by Spring of 1994.[2]

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1 UNHCR, *Information Notes on former Yugoslavia*, October 1994.

2 Ibid., January 1993 and May 1994.

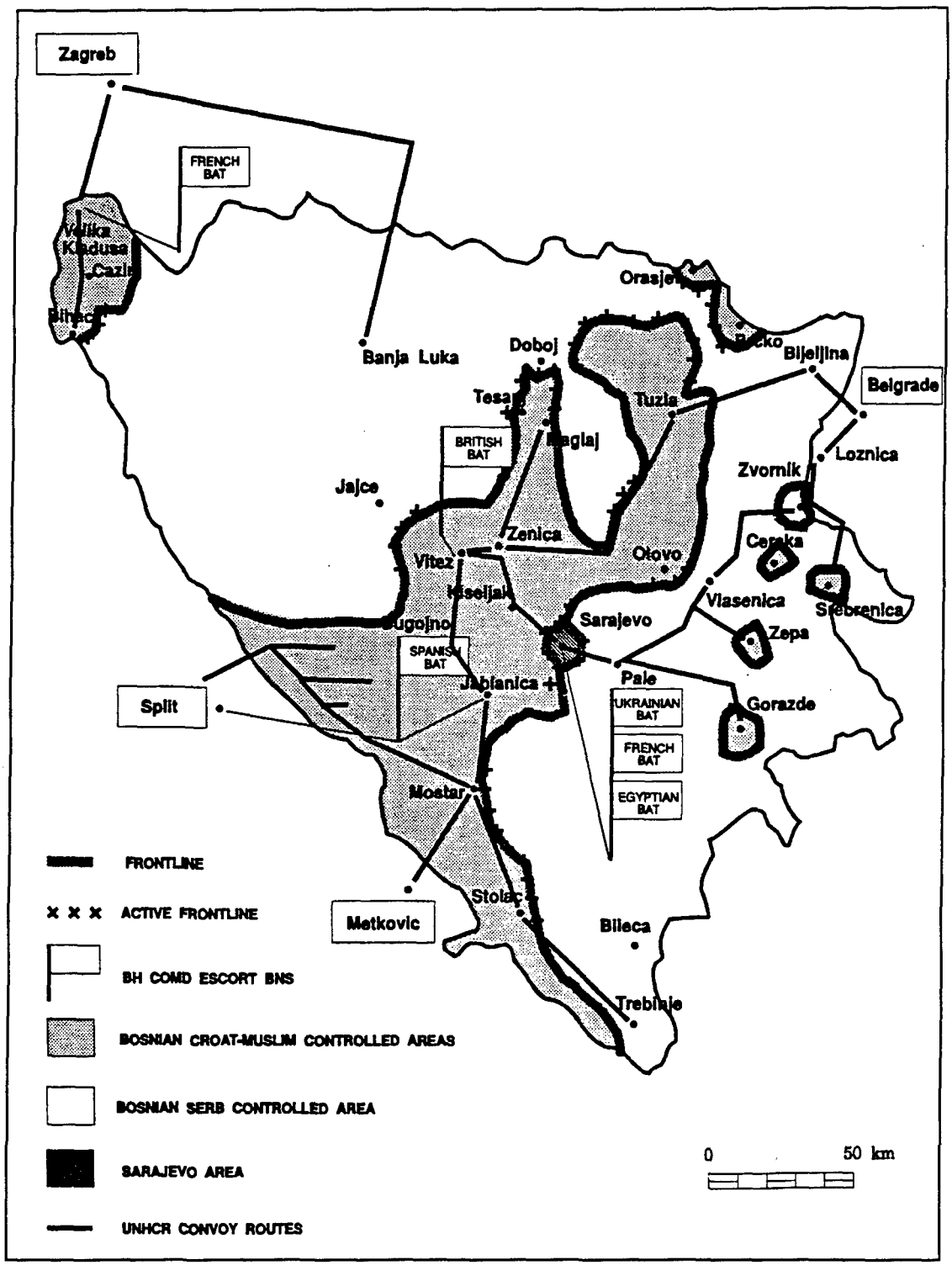

Figure I-1. Military Situation in Bosnia-Herzegovina, 1993

Table I-1. Bosnia and Herzegovina Beneficiaries

Date	Location						Total
	Banja Luka Area	Bihac Area	Central Bosnia and Tuzla	Eastern Bosnia	Sarajevo	Southern Bosnia and Herzego-vina	
Jan 1993	250,000	250,000	380,000	260,000	380,000	100,000	1,620,000
Feb 1993	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Mar 1993	286,000	267,000	734,000	285,000	380,000	285,000	2,237,000
Apr 1993	286,000	267,000	734,000	285,000	380,000	328,000	2,280,000
May 1993	286,000	267,000	734,000	285,000	380,000	328,000	2,280,000
Jun 1993	284,000	205,000	740,000	336,000	380,000	335,000	2,280,000
Jul 1993	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Aug 1993	284,000	205,000	740,000	336,000	380,000	335,000	2,280,000
Sep 1993	284,000	205,000	740,000	336,000	380,000	335,000	2,280,000
Oct 1993	303,000	228,000	1,002,000	508,000	431,000	268,000	2,740,000
Nov 1993	303,000	228,000	1,002,000	508,000	431,000	268,000	2,740,000
Dec 1993	303,000	228,000	1,002,000	508,000	431,000	268,000	2,740,000
Jan 1994	303,000	228,000	1,002,000	508,000	431,000	268,000	2,740,000
Feb 1994	303,000	228,000	556,000	508,000	431,000	268,000	2,294,000
Mar 1994	303,000	228,000	556,000	508,000	431,000	268,000	2,294,000
Apr 1994	303,000	228,000	556,000	508,000	431,000	268,000	2,294,000
May 1994	284,000	231,000	612,000	473,000	441,000	309,000	2,350,000

NOTE: Data taken from UNHCR, "Information Notes on former Yugoslavia," January 1993 to August 1994. Numbers may vary slightly due to UNHCR changes in area designation.

Throughout the 1993-94 period, the United Nations (UN), the European Community (EC) and important bilateral players – operating alone or in concert[3] –

[3] International efforts to bring peace to Bosnia included the International Conference on the Former Yugoslavia (ICFY), launched by the UN and the European Community (EC) in 1992, which generated the 1993 Vance-Owen Peace Plan (VOPP), and the "Contact Group," established in 1994. The Contact Group consisted of the foreign ministers of France, Germany, the Russian Federation, the United Kingdom, and the United States, as well as the European Union Commissioner for Foreign Affairs and the two co-chairmen of the ICFY Steering Committee.

sought workable solutions to the Bosnian conflict. These efforts were severely constrained by powerful geopolitical dynamics: traditional Russian interests in Yugoslavia, fears of a larger Balkan war, and other factors. When the air drop operations began, the joint UN/EC "Vance-Owen" Peace Plan (VOPP), which proposed the substantial partitioning of Bosnia among ethnic parties, was under active consideration by the international community and the Bosnian entities. In the United States, the January 1993 arrival of the newly elected Clinton Administration in Washington spurred a reappraisal of U.S. interests and options. The chronology of key events related to the air drop operation in Bosnia is summarized in Table I-2.

Table I-2. Chronology of Key Events in Bosnia, Including Air Drop Operations

EVENT	DATE
Break-up of Yugoslavia begins with declaration of independence by Slovenia; Croatia declares independence from Yugoslavia; civil war erupts between Croatian and federal (Yugoslav) forces, and among groups of irregulars, along ethnic lines4	6/91
International Committee of the Red Cross (ICRC) and other relief agencies begin emergency operations in Bosnia/Herzegovina	6/91
United Nations High Commissioner for Refugees (UNHCR) designated lead UN agency for relief operations; civilians requiring relief total an estimated 1.6 million	10/91
U.S. Ambassador declares disaster in former Yugoslavia, triggering USG civilian relief agency involvement	11/91
United Nations Protection Force (UNPROFOR) created to separate warring factions; mandate later expanded to protect humanitarian operations	2/92

4 References to "Yugoslavia" after 1992 refer to the Serb-dominated alliance of Serbia and Montenegro, which retained the name Yugoslavia. "Former-Yugoslavia" refers to the countries of the region that were formerly part of the Socialist Federal Republic of Yugoslavia, including Bosnia and Herzegovina, Croatia, Macedonia and Slovenia, as well as the residual Yugoslavia (Serbia and Montenegro).

Table I-2. Chronology of Key Events in Bosnia, Including Air Drop Operations (continued)

EVENT	DATE
Bosnia-Herzegovina declares independence from Yugoslavia; Bosnian Serbs boycott vote for independence, fearing minority status in independent Bosnia5	2/92
U.S. recognizes breakaway republics; large-scale fighting across Bosnia, along ethnic lines; multi-ethnic, primarily Muslim, government forces lose ground to Bosnian Serb fighters, latter backed by the Yugoslav military	4/92
Five U.S. Air Force C-141s, funded by the Office of U.S. Foreign Disaster Assistance (OFDA), fly relief supplies to Sarajevo Airport; first direct U.S. military involvement in Bosnian relief operations	4/92
"Enclaves" develop as civilians flee "ethnic cleansing" and concentrate in besieged areas, isolated by opposing forces; Bosnian Serbs control much of the countryside; most enclaves are government controlled, primarily Muslim	5/92
Multi-national "Airbridge" begins to besieged Bosnian capital, Sarajevo, delivering humanitarian supplies; U.S. forces participate, beginning in July	6/92
Airbridge operations experience the first of many suspensions, following shelling near the Sarajevo Airport; operations suspended for a month after the downing of an Italian relief flight in September by unknown forces	8/92
United Nations Security Council authorizes the use of "any necessary means" to deliver relief supplies to civilians in Bosnia	8/92
UN Security Council Resolution 781 imposes a "no-fly zone" over Bosnia/Herzegovina, for all but relief flights	10/92
Bosnian population requiring international assistance reaches an estimated 1.6 million; OFDA dispatches Disaster Assistance Response Team (DART) to Zagreb, to coordinate U.S. humanitarian assistance throughout former Yugoslavia	12/92
USEUCOM establishes Joint Task Force Provide Promise (JTFPP) to provide consolidated command and control of U.S. forces in former Yugoslavia	2/93
Newly-elected Clinton Administration conducts review of U.S. policy in Bosnia; announces enhanced U.S. efforts, political and humanitarian	2/93
U.S. military air drops begin to besieged Bosnian enclaves	2/93
Muslim enclaves of Cerska and Konjevici fall to Bosnian Serb forces within days after first relief supplies are delivered by American aircraft	3/93

5 The official name of Bosnia is "Bosnia and Herzegovina." Although senior officials and soldiers of the Bosnian government are primarily Muslim, Bosnian government official policy is to maintain a multi-ethnic state in Bosnia and Herzegovina.

Table I-2. Chronology of Key Events in Bosnia, Including Air Operations (concluded)

EVENT	DATE
French and German military aircraft join U.S. forces in air drop operations	3/93
First use of "flutter drops" of food supplies in enclaves, in attempt to ensure most-needy civilians are receiving assistance	3/93
VOPP rejected by warring factions; military attacks on isolated enclaves continue or intensify	5/93
Formerly allied Bosnian Croat and Bosnian Muslim (government) forces begin fighting each other; overland delivery of relief supplies in Bosnia further limited	5/93
Relief agencies attempt to increase preparations for coming winter, including delivery of increased foodstuffs and winterization supplies	7/93
Continued warfare, ethnic cleansing, and civilian deprivation in Bosnia; air drop targets are shifted to reach new areas of greatest need	8/93
Bosnian population requiring international assistance increases to 2.7 million	10/93
U.S. Secretary of State announces increase in American assistance to Bosnia; by January, air drop sorties double to sixteen per night, focused on winterization assistance, continuing this tempo until March	11/93
UNPROFOR and factions negotiate a heavy weapons "exclusion zone" around Sarajevo; NATO threatens air attacks to enforce the agreement	2/94
Seeds added to air-dropped items to spur limited food production in enclaves	3/94
"Bi-communal Federation" announced, ending Muslim-Croat fighting; increased humanitarian and commercial food deliveries through Central Bosnia	3/94
NATO launches air strikes against Bosnian Serb positions ringing Gorazde	4/94
Air drops terminated	8/94
Enclave of Srebrenica falls to Bosnian Serb forces; widely reported massacres of defenders and civilians; enclave of Zepa falls later in July. Both towns had been supplied by JTFPP air drops from March 1993 through Spring 1994	7/95
NATO Operation Deliberate Force launches air attacks against Bosnian Serb positions	8/95
Armed confrontations and attacks on civilians continue in Bosnia until cease-fire in October; population requiring international assistance is an estimated 1.4 million	10/95
Dayton Accords end the 1992-95 conflict in Bosnia-Herzegovina	12/95
Intervention Force (IFOR) deployed to Bosnia	12/95
Air bridge operations terminated	1/96
JTFPP demobilized	3/96

On the ground in Bosnia, an array of international organizations attempted to alleviate the humanitarian crisis during the 1993-94 period. The Geneva-based UNHCR, normally tasked with the limited function of protecting and caring for refugees, had been designated the United Nations "lead agency" for humanitarian assistance in the former Yugoslavia.[6] The United Nations Protection Force (UNPROFOR), the UN peacekeeping contingent, had by 1993 received the mandate to support the delivery of humanitarian relief throughout Bosnia and Herzegovina.[7] In theory, overall coordination of UN activities in former Yugoslavia — humanitarian, political and military — resided with the office of the Special Representative of the Secretary General (SRSG). However, a full – time SRSG with responsibilities for overall operations was not posted until January 1994. Intra-UN coordination issues, therefore, were numerous, and complicated planning and execution of air drops, as well as other operations.[8]

Of special note, the UN had adopted an explicit policy of "consent" as to the delivery of humanitarian supplies in Bosnia. That is, although the UN would advocate strenuously for the delivery of assistance, it would, consistent with the nature of a peacekeeping mission, seek the consent of factions controlling transit routes.

The roster of relief agencies in Bosnia in 1993-94 was extensive. It included UN entities (the World Food Programme [WFP], the World Health Organization [WHO], and the United Nations Children's Fund [UNICEF]); international organizations (the

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6 As is generally the case with civilian "lead agencies" in humanitarian crisis zones, lead agency status for UNHCR carried with it a fluid set of responsibilities and only fragile authority to coordinate the array of relief agencies working in the region.

7 UNPROFOR would ultimately grow to 38,599 military personnel, including 684 UN military observers. Initially formed in 1992 to establish security in "United Nations Protected Areas" (UNPAs) in Croatia during the break-up of Yugoslavia, UNPROFOR's mandate was steadily expanded in the interim. By the time air drops began in Bosnia, UNPROFOR had responsibility to "ensure the security and functioning of the airport at Sarajevo, and the delivery of humanitarian assistance to that city and its environs ... [S]upport efforts by the United Nations High Commissioner for Refugees to deliver humanitarian relief throughout Bosnia and Herzegovina, and to protect convoys of released civilian detainees if the International Committee of the Red Cross so requested ... [M]onitor the 'no-fly' zone, banning all military flights in Bosnia and Herzegovina, and the United Nations 'safe areas' established by the Security Council around five Bosnian towns and the city of Sarajevo. UNPROFOR was authorized to use force in self-defense in reply to attacks against these areas, and to coordinate with the North Atlantic Treaty Organization (NATO) the use of air power in support of its activities." During the 37 months of its existence, UNPROFOR—lightly armed, widely dispersed, and frequently caught between warring factions – suffered 167 fatalities. (UN Department of Public Information, *Former Yugoslavia – UNPROFOR*, 1996)

8 U.S. General Accounting Office, *Humanitarian Intervention: Effectiveness of U.N. Operations in Bosnia*, GAO/NSIAD 94-156BR, April, 1994, p. 33

International Committee of the Red Cross [ICRC],[9] International Organization for Migration [IOM], and others); government organizations (the Office of U.S. Foreign Disaster Assistance [OFDA], the European Community Humanitarian Office [ECHO], and representatives of several European nations); and dozens of American, European and Yugoslav non-governmental organizations (NGOs).

The international humanitarian community encountered significant impediments to its operations throughout the 1993-94 period of conflict in Bosnia. Onerous administrative requirements, obfuscation, threats, repeated violations of humanitarian and human rights law, difficulty in obtaining accurate census numbers, blockades and direct attacks faced civilian relief workers throughout the air drop timeframe. The ICRC – among the most effective relief organizations – characterized the humanitarian environment in 1993-94 this way: "the parties to the conflict have not yet honored their commitments ... [I]n the current circumstances aid organizations are not in a position to avert what may turn into an appalling human tragedy if the fighting does not cease ...." Nowhere were these frustrations more evident than in attempts by the UN, ICRC, and NGOs to deliver relief supplies to conflict victims in isolated enclaves.

Throughout the 1993-94 period, the primary mode of transport for humanitarian assistance in Bosnia was road convoy, organized by UNHCR or other relief agencies, and escorted in most cases by UNPROFOR troops. From April, 1993 through March, 1994 – during the heart of the air drop campaign – more than 70 percent of donor-supplied food assistance moving through the UN system was transported by truck. Not counting food aid to Sarajevo, where the "air bridge" accounted for a large proportion of relief deliveries, over 90 percent of relief food in Bosnia was supplied by truck during this period.[10] Operating out of warehouses in Croatia, Yugoslavia (Serbia) and Bosnia, truck convoys targeted dozens of destinations in Muslim-, Croat- and Serb-controlled regions of Bosnia, often crossing territory controlled by opposing factions.

Bosnia's challenging road network, weather conditions and logistics constraints made vehicular delivery of humanitarian assistance difficult. By far the greatest challenge, though, was the resistance by armed factions – sometimes organized, sometimes spontaneous – to humanitarian convoys delivering supplies to a different

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9 The ICRC was especially active in Bosnia, taking care of humanitarian assistance to 360,000 beneficiaries. The organization worked in collaboration with, rather than under the control of, UNHCR.

10 Computations based on data from UNHCR, *Information Notes on former Yugoslavia*, April, 1994.

ethnic group. Armed factions employed a diverse array of techniques to stymie humanitarian convoys, ranging from newly invented documentation requirements to attacking and killing convoy personnel. In the one-year period between April 1993 and March 1994, impediments to humanitarian assistance operations meant that only about 60 percent of total relief requirements were met in Bosnia.[11]

B. TARGET POPULATIONS AND THEIR NEEDS

Operation Provide Promise focused on 12 locations, identified by UNHCR, that faced severe needs. These twelve locations or "enclaves," shown in Table I-3, all shared one characteristic: factional conflict isolated these areas, making road access difficult even by Bosnian standards, resulting in extreme need for civilian populations.

Table I-3. List of Bosnian Enclaves Receiving

Enclave	Beneficiary Population
Bihac	250,000
Bjelimici	10,000
Cerska	Not Available
Gorazde	66,000
Konjevici	Not Available
Maglaj	13,582
Mostar (Eastern)	60,000
Srebrenica	44,140
Tarcin	85,030
Tesanj	16,953
Tuzla	446,500
Zepa	10,000

Source: Data from the Office of U.S. Foreign Disaster Assistance

Humanitarian agencies' field reports from the 1993-94 period suggest the level of deprivation in the enclaves:

- "[T]here is no sanitation and garbage remains in the streets, where many displaced people are sleeping" [Srebrenica]
- "[A]n artillery barrage killed 36 people immediately and wounded 102; half the dead were women and children." [Srebrenica]
- "[N]o water distribution in the old part of town ... and the only two sources of water are near frontlines with sniper activity." [Mostar]

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[11] Ibid.

- "At night and when there is shelling by day the people take to the cellars. Most of these are unheated, damp and have no sanitation .... [T]he damaged buildings have become the main toilets." [Mostar]
- "[P]eople gather wheat flour from [the] air drop with spoons from the mud. This is a mixture of mud and flour but it is still precious." [Gorazde]
- "[A]fter weeks of shelling, some 40 percent of the buildings are uninhabitable. The town has no electricity or fuel." [Gorazde]
- "[T]he hospital has 70 beds with 200 patients. The smell of infection and gangrene pervades the hospital." [Gorazde]
- "Garbage is piling up and some municipalities now face a proliferation of the rat population ....WHO has reported 200 cases of Hepatitis A" [Tuzla].
- "[B]etween 20 to 30 percent of the population are severely malnourished .... several children are only skin and bones .... [S]kin, eye and ear infections are rampant." [Maglaj]
- "An estimated 1,400 shells reportedly fell on [the] city on 6 February." [Bihac][12]

Relief organizations working in Bosnia identified the following categories of recurring material needs facing civilians in 1993-94:

- Food, including shortfalls in adequate nutrition for the general population,[13] plus specialized needs for targeted groups (malnourished children, pregnant women, lactating mothers, and the elderly)
- Safe drinking water
- Energy supplies, including electricity, natural gas, and especially diesel fuel needed to power ambulances, generators at hospitals, generators at water treatment facilities, and for similar emergency needs
- Medical supplies, both for treatment of wounds and other curative care, and for public health campaigns such as immunizations
- Winterization materials, including clothing, shoes, blankets, bedding, stoves, fuel for stoves, and candles

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12 All information from UNHCR, *Information Notes on former Yugoslavia*, January 1993 to May 1994.

13 In some areas, limited food supplies were available, but priced – as happens in many humanitarian crises – out of the reach of most residents. Reports indicate that the price of cooking oil in Tuzla had reached 20 Deutschmarks per liter, at a time when many displaced persons were penniless. Ibid, October 1993.

- Emergency shelter materials, such as tents and building supplies required to make emergency repairs to damaged buildings (especially plastic sheeting and roofing tacks)
- Seeds, to permit displaced and other war-affected communities to grow some of their own food supplies.[14]

Conditions in the enclaves varied over time and among the enclaves. But in each of these seven categories, humanitarian needs were especially great in the twelve areas chosen as air drop targets.

The population totals of these enclaves varied considerably during the Bosnian conflict, with the ebb and flow of battle, as displaced persons fled into or out of the sites. Srebrenica's 7,000 pre-war residents hosted more than five times that number of internally displaced persons during the 1993-94 period, while the Tuzla region's population swelled from 200,000 to 450,000. Based on UNHCR's admittedly rough census, the populations of the enclaves ranged from perhaps 650,000 to 1,000,000 or more during the air drop period.

While all the enclaves were relatively isolated, and while all experienced shortages of essential goods, the locations varied in important ways that had implications for planning humanitarian operations. Among the significant differences were:

1. The Degree of Isolation

Several enclaves were virtually sealed by opposing forces from outside contact. For long periods, no humanitarian relief convoys reached some enclaves. Other enclaves had more or less porous boundaries, with continuing population movement in and out, receipt of remittances from family members abroad, some degree of commercial traffic in and out, and ongoing, if irregular, convoy deliveries of humanitarian supplies.[15]

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14 Office of U.S. Foreign Disaster Assistance, *Situation Report No. 14: Former Yugoslavia – Civil Strife*, 16 November 1993.

15 In some cases, food convoys were halted not because of direct attack or local harassment by factions, but by policy decisions on the part of the international humanitarian community. Relief convoys throughout Bosnia were suspended by UNHCR for 29 days beginning 25 October 1993, for example, following an attack near Vitez that killed a Danish driver and wounded several other humanitarian workers.

2. The "Coping Capacity" of Residents

In several enclaves, large farming populations, livestock herds, and agricultural land sheltered from direct attack permitted local production of food supplies. Other, primarily urban, enclaves relied more heavily on outside sources of nutrition. Several enclaves had accessible sources of potable water and at least limited energy supplies. For other enclaves, drinking water and other utilities were controlled by outsiders, often the besieging forces, severely diminishing local coping capacity. Many of the enclaves contained operational, if understaffed and inadequately supplied, medical institutions, facilitating at least emergency and primary medical care.

3. The Level of Military Activity

The degree to which the enclaves were subject to direct attack varied substantially among locations and, over time, within locations. A number of variables -- localized military exigencies; allegations of offensive military operations staged from within the enclaves; the status of the on-again, off-again Muslim-Croat confederation; the threat of NATO response; the designation of UN "safe areas" and stationing of UNPROFOR troops – affected the intensity of military activities around the enclaves, and the willingness of besieging forces to permit delivery of humanitarian supplies. Of importance for an analysis of humanitarian relief options, most of the enclaves remained intact, with generally static boundaries, during the period of air drop operations. Notable exceptions were the towns of Cerska and Konjevici, which were overrun in March 1993, within several days after air drops commenced.

4. Threat Posed by Anti-Aircraft Defense Systems

Joint Task Force Provide Promise rated the threat from anti-aircraft defenses around most pockets as "minimal."[16] However, the Bihac area in particular contained a significantly more sophisticated threat to crews and aircraft conducting air drop operations. Bihac had "an integrated air defensive system" strategically located around the enclave. According to JTFPP, "Air drop missions around Bihac exposed aircraft to concentrated AAA [anti-aircraft artillery] and SAM [surface-to-air missile] batteries."[17] Continuing concerns about the threat environment around Bihac shaped JTFPP's response to UNHCR requests to air drop humanitarian supplies in this vicinity.

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16 *JTFPP Command Chronology*, p. II-D-7.

17 Ibid., p. II-D-7.

5. International Presence

Conditions in certain enclaves permitted UN Military Observers (UNMOs) or international staff from UNHCR, the ICRC, NGOs, the EC monitoring mission, or other entities to retain a presence inside. The presence of these staff potentially permitted better assessment of conditions on the ground, monitoring of changes in health or nutritional status, better reporting to relief planners, and advocacy with local authorities for professional standards in relief delivery. During the air drop operations, UNHCR claimed an office or presence in the Bihac, Gorazde, Srebrenica, Tuzla, and Zepa pockets. Other enclaves had no permanent international presence, and only rare visits.

6. Ethnic Composition

Most of the enclaves sheltered Bosnian Muslim majorities; some were virtually all Muslim. However, others contained sizeable civilian populations from other ethnic groups. The ethnic composition of the besieged populations potentially affected the humanitarian situation in several ways: first, it may have moderated military activities when besieging forces knew that co-religionists were among the enclave's population; second, a mixed ethnic make-up may have facilitated humanitarian access for the same reason; third, the presence of ethnic minorities among the enclave population raised additional questions about equitable distribution of those relief supplies that were delivered.

7. Size

The Bihac area measured approximately 45 kilometers by 25 kilometers, while other enclaves were only a few kilometers across. The size of the enclaves affected delivery techniques for relief supplies, especially air dropped supplies.

8. Nature and Capacity of Local Authorities

Given the limited international presence within the enclaves, most of the collection, storage, and distribution of relief supplies remained in the hands of local authorities during the 1993-94 timeframe. Anecdotal reporting suggests that the quality and capacity of those authorities varied significantly. International relief workers who visited the Bosnian enclaves praised attempts by selected local leaders to operate equitable distribution systems. Other local leaders allegedly profited personally from the hoarding and sale of relief supplies, or failed to prevent criminal elements from profiting. Moreover, since all enclaves were militarized, regular troops or militias defending the

enclaves received a portion of all relief supplies. The allocation of food, medicine and other essentials between military and civilian beneficiaries was in the hands of local authorities.[18]

In short, despite imprecise census data and limited access, it was clear that very many Bosnian civilians were in dire need during the 1993-94 period. It was equally clear that the best efforts of the international humanitarian community, relying on truck convoys and the consent of all parties, were not going to meet those needs, especially in isolated pockets.

C. CONSIDERATIONS LEADING TO A DECISION ON AIR DROPS IN FEBRUARY 1993[19]

Air drops in Bosnia reportedly had been considered before the winter of 1992-93. In Summer of 1992, the Bosnian government requested the UN to consider air drops as part of its humanitarian operation. After study by British military analysts, the concept was rejected. The topography of Bosnia, according to this analysis, would present air crews with unacceptable risk in order to achieve acceptable accuracy.[20]

By January 1993, however, several dynamic processes interacted to create momentum for air drops. First, there was a clear-cut recognition of widespread human suffering. Reports on the eastern Bosnia enclaves reaching UNHCR's Geneva headquarters from Sarajevo suggested "extreme" need, which impelled a search for "extremist measures," according to UNHCR officials working in Bosnia at the time.

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18 In its January 1994 report, the UNHCR noted that "diversion of food to the military is a cause of great concern because it means that civilians, in particular the most vulnerable – elderly and children – will not receive their share." Although it would be unrealistic to believe that military defenders of the enclaves would not receive a portion of limited emergency supplies, UNHCR noted with concern "the recent announcement by the BiH [Bosnian] Government of priorities for rationing of food stocks, favouring soldiers." UNHCR, *Information Notes on former Yugoslavia*, January 1994.

19 The analysis in this section draws on multiple sources: review of media reports from the period; the Checchi and Associates, *OFDA former Yugoslavia Review Team Report* [draft], expected 1999; an interview with the former U.S. Ambassador to Bosnia and Herzegovina, John Menzies, who served as Acting Deputy Coordinator for East European Assistance at the Department of State during 1993-94; and the recollection of a member of the IDA research team. James Kunder, from IDA, served as director of OFDA during this period, and participated in interagency policy discussions on Bosnia.

20 Tom Friedman, *Clinton asks UN Chief to meet on plan for Air drop to Bosnians*, the New York Times, 23 February 1993, p.1.

These officials, frustrated by their failure to increase road delivery of supplies, were open to whatever techniques might work to get emergency assistance to conflict victims.[21]

Second, a number of alternatives to air drops seemed unfeasible or politically unsupportable. The options considered by international officials in early 1993 included opening the Tuzla airport to humanitarian flights to create a hub for relief operations, expanding the UNPROFOR mandate to ensure the delivery of relief by force of arms, or increasing bilateral pressure to open the enclaves. Fear of retaliation, limits placed by contributing nations on the mission of UNPROFOR troops, contradictory bilateral strategies, and other political factors conspired to doom the alternatives to air drops.

Third, U.S. government interest in the enclaves increased noticeably in early 1993 as the incoming Clinton Administration conducted an intense review of American policy, with an eye to doing more in Bosnia. A complex and sometimes contentious interagency decision process[22] – bounded on one extreme by the President's desire to show American leadership in Bosnia, and on the other extreme by a desire to focus on domestic policy – resulted in a policy package that included humanitarian air drops. Government officials or analysts identified the following U.S. policy goals in contemporary media accounts:

- Supplementing humanitarian assistance to besieged enclaves
- Enhancing U.S. credibility in the Bosnia peace negotiations
- Inducing the Bosnian government to return to ongoing peace negotiations
- Encouraging Bosnian Serbs to ease restrictions on overland relief convoys.

Significantly, the Clinton Administration package also included a commitment to providing U.S. forces to support implementation of a future peace agreement, and a plan to seek UN authority to enforce a no-fly zone in Bosnia. Therefore, in the eyes of observers, friendly or hostile, the air drop plan was seen as one part of a significant policy shift enlarging America's commitment in the Balkans.[23]

Fourth, U.S. military planners were able to design a concept of operations that reduced to acceptable levels the risk of casualties to forces conducting the operations.

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21 Interview with Neill Wright, Head, former Yugoslavia Liaison Office, UNHCR, 22 September 1998; interview with Karen Konig Abuzayd, Director of UNHCR Washington Office, 29 September 1998.

22 See Elizabeth Drew, *On the Edge*, Chapter 10, *Bosnia: "Our Conscience Revolts"* (New York: Simon and Schuster, 1994), for a description of this policy process.

23 Secretary of State Warren Christopher, *New Steps toward Conflict Resolution in the Former Yugoslavia,* News Conference Opening Statement, 10 February 1993.

The choice of night, medium altitude drops – although initially raising profound concerns regarding accuracy – removed most concerns about force protection, and supplied a previously missing piece of the policy puzzle.

The synergy among these four processes does not imply that the decision to commence air drop operations was straightforward. A number of important additional considerations impinged on the decision process. These included:

1. The Uncertain Response of Besieging Forces

It was unclear whether Bosnian Serb forces (either in a coordinated fashion or through the action of rogue units) would shoot at aircraft delivering humanitarian supplies; attack UNPROFOR troops, relief workers or Americans in Bosnia; step up their attacks on the enclaves; launch terrorist attacks on American interests outside Bosnia; and/or increase or diminish pressure on convoys. U.S. diplomatic warnings, and a combination of tactics negotiated by U.S. officials – permitting inspection of cargoes by Bosnian Serb officials, agreeing to consider drops to Serb and Croat communities, and dropping leaflets in planned target areas to explain the purpose of the air drops – reduced the threat of military action to acceptable levels, but never eliminated it completely. The fall of two enclaves (Cerska and Konjevici), within days after air drops commenced,[24] sharpened these concerns.

2. Concerns of the DoD with Defining the "End State"

According to reports, General Powell, then Chairman of the Joint Chiefs of Staff (CJCS), repeatedly argued in the interagency forum for a clearly defined end-state before commencing Operation Provide Promise air drops. This issue remained open when air drops ceased 18 months later. Joint Task Force Provide Promise's *Command Chronology* states: "The most significant challenge JTFPP faced, and which colored the entire operation, was the lack of a defined end state, political or military."[25]

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24 Cerska and Konjevici were Muslim enclaves in northeast Bosnia and Herzegovina. Cerska received the first JTFPP air drops, on 28 February 1993; air drops to Konjevici began several days later. Cerska was overrun by Bosnian Serb forces on 2 March; Konjevici fell to the Bosnian Serbs on 5 March. Displaced persons from both pockets fled to the Srebrenica enclave, swelling the population in that besieged town.

25 *JTFPP Command Chronology*, p. I-2.

3. Ambivalent Initial Relations with the UN and its Component Entities

The UNHCR, the lead humanitarian agency in Bosnia, appeared to welcome the offer of air drops.[26] However, the agency did not have systems up and running to coordinate fully with military units carrying out the drops. Even more significant, the leader of UNPROFOR, French LtGen Philippe Morillon, opposed the tactic, arguing that it would increase attacks on his forces as well as the enclaves. Finally, UNPROFOR and the Office of the UN Secretary-General initially argued for operational command and control of the air drops, as well as continuation of the UN policy of "consent" from the warring factions. These issues had to be addressed (see below, under "command structure") to permit the operation to go forward.

4. Ongoing Debate about the Effectiveness and Implications of an Air Drop Policy

The Office of U.S. Foreign Disaster Assistance opposed the air drop plan during interagency deliberations on the grounds that it would be ineffective in supplying a significant portion of needed supplies, and that it would serve as a substitute for effective international action to open ground routes. The British government, conscious of the enormous efforts being made by its troops and other UNPROFOR forces to escort convoys, initially took a similar position.[27] Some in the Department of Defense and, ironically, the Bosnian Serbs expressed concerns that air drops would be a first step on a slippery slope to greater U.S. military involvement. These and related debates continued throughout the period of the air drop operations.

The decision to begin air drops combined humanitarian, political, diplomatic, and military issues at the tactical and strategic levels. The decision process included both practical and symbolic aspects, and generated a number of considerations for future operations, discussed in subsequent chapters.

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26 See Sadako Ogata, UN High Commissioner for Refugees, letter to Mr. Anthony Lake, 18 March 1993.

27 Wariness on the part of U.S. allies about air drop operations was also related to persistent allegations (by some UNHCR staff, by some UNPROFOR staff, and by others involved in relief programs) that the U.S. government was dropping military supplies to Bosnian Serb forces under cover of the humanitarian supply effort. Despite efforts by the U.S. military to dispel these rumors, and despite the ongoing inspection program at Rhein-Main, allegations of air dropped military supplies dogged JTFPP missions throughout the duration of the operations

CHAPTER II

AIR DROP OPERATIONS IN BOSNIA

II. AIR DROP OPERATIONS IN BOSNIA

A. CONCEPT OF OPERATIONS; UNITS PROVIDING AIR DROP SUPPORT [1]

The concept of operations for the air drops was straightforward in design, if complex in implementation. Requests for humanitarian assistance were generated by the UNHCR, and transmitted to Headquarters JTFPP, which made the final decision to proceed with specific air drops. JTFPP transmitted its decision to the subordinate U.S. Joint Forces Air Component Command (JFACC), which exercised Tactical Control (TACON) over the U.S. Air Force 435th Air Wing (AW), equipped with C-130s and stationed at Rhein-Main Air Base, Germany. The 435th AW executed the air drop missions into Bosnia. French and German C-160 aircraft joined the operation on some of the missions.

UNHCR/Zagreb generated a list of priority air drop targets based on its internal assessment of humanitarian needs within the enclaves. Based on the agency's best sources, a population figure was established for each pocket. To compute food requirements, UNHCR relied on existing formulae for average daily nutritional requirements per person.[2] Using population figures and these formulae, the agency calculated the total caloric requirement for each enclave, changing the minimum caloric requirement based on seasonal variation (intake requirements went up about 15 percent in the winter). UNHCR then estimated available food stocks within each enclave, as well as recent and expected convoy deliveries. If there was a significant shortfall between estimated needs and estimated availability in a particular enclave, that enclave was placed on the priority list. Similar processes were followed for medical supplies, shelter and winterization equipment, and other categories of assistance.

UNHCR's former Yugoslavia headquarters, located in Zagreb, undertook several coordination processes before transmitting its request for air drops to JTFPP. First, UNHCR gathered information from any of its own staff located within the enclaves, from

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1 The following narrative draws heavily from the *JTFPP Command Chronology*.

2 For example, summer rations in 1993 were computed at 535 grams of food, slightly over one pound, per person, per day, or 1,869 rations per metric ton.

UNMOs stationed within the enclaves, and from other generally reliable sources of information on conditions within the enclaves (NGOs, the ICRC, local officials, and, in extreme cases, radio transmissions from isolated pockets). Second, UNHCR/Zagreb contacted the Air Operations Cell Group (AOCG) at UNHCR's Geneva, Switzerland headquarters to ensure air drop requests were consistent with overall UNHCR humanitarian air operations policy and priorities. Third, it coordinated with UNPROFOR. UNHCR staff in Sarajevo would work with UNPROFOR's BH Command Civil-Military Operations Center (CMOC) to notify regional and local entities – civilian government authorities, local military units, Bosnian relief agencies – of the planned operations and seek their concurrence with the drops. Fourth, UNHCR coordinated with potential donors of relief supplies – the World Food Programme (WFP), the EC, donor nations, and humanitarian organizations – to ensure that relief pipelines contained required items. Only after coordination with these locations was completed, and data consolidated in Zagreb, did UNHCR send its priority list to Headquarters, JTFPP.[3]

Requests forwarded from UNHCR to JTFPP were assessed by an air drop mission "target board," made up of JTFPP staff. In the words of the *JTFPP Command Chronology*, this board:

> "evaluated the validity and need of the locations proposed by the UNHCR. Their guidance included, but was not limited to: minimizing the risk to the aircraft and crew; maintaining a non-combat appearance; and minimizing collateral damage. The board used specific criteria, such as: proximity to lines of confrontation; terrain; lines of communication; DZ locations; artillery lines of sight; mines; threats to the aircraft; and DZ size."

The Joint Forces Air Component Command (JFACC), located in Vincenza, Italy, completed detailed planning of the missions. After planning was completed, COMJTFPP made the final decision to execute the missions. At this point, JTFPP staff notified the French and German governments of the approved mission, to ascertain their desire to participate in that particular operation. Once the flights were airborne, JFACC staff

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[3] UNHCR priority lists were a central, but not the sole, information source guiding JTFPP mission selection. Mission planners also gathered information from what the JTFPP Command Chronology called a "multitude of agencies making inputs....," including intelligence sources, other relief agencies, Bosnian government officials, and UNPROFOR. The complexity of the air drop operation, different geographic and institutional perspectives, and informal information exchange among participating agencies all combined to produce a mission prioritization process that only imperfectly traced the ideal coordination model described. Moreover, the UNHCR coordination procedures described were developed over time and were not all in place at the outset of the air drop operation.

controlled the mission from the NATO Combined Air Operations Center (CAOC), also located in Vincenza. JFACC provided important support functions for mission aircraft, including communications, intelligence, tactical air traffic control and fighter support.

Rhein-Main Air Base was the site where aircraft, cargo, riggers, loadmasters and inspectors were brought together. Humanitarian supplies, including bulk food (meals-ready-to-eat [MREs] or humanitarian daily rations [HDRs]), medical supplies, and other items, were delivered to Rhein-Main by donors for rigging and loading.[4] The JTFPP J-4 worked closely with UNHCR and (USAREUR) General Support Center Kaiserslautern to manage stocks, ensure availability and correct configuration of the relief items, and report inventory levels. The JTFPP J-4 also coordinated logistical planning with the USEUCOM J-4, the Global Affairs Office within the Office of the Secretary of Defense, and Rhein-Main Air Base, as well as with UNHCR.

Air drop bundles were rigged by the members of the USAREUR 5th Quartermaster Company, who also assisted 435th AW loadmasters in preparing the C-130s for departure. Riggers prepared the cargo in a great variety of configurations related to specific mission criteria (these are discussed under "Technical Aspects" below). Prior to departure from Rhein-Main, the cargoes were inspected by UNHCR and by representatives of the three factions prior to loading.

The C-130s flew from Rhein-Main to the drop zones in Bosnia. Over an 18-month period, U.S. aircraft flew 2,117 sorties (77 percent of the total air drop sorties), delivering 14,394 metric tons of supplies (80 percent of the total air drop tonnage) to twelve different enclaves. French and German C-160 transport aircraft contributed another 618 sorties, delivering 3,598 metric tons. All of the aircraft flew only at night, at a minimum altitude of 10,000 feet above ground level (AGL). The U.S. aircraft flew alone or in a three-ship formation, with missions targeting two or three locations per night. Each mission aircraft flew one mission per night, and the missions covered 5 to 6 hours duration. Results of the drops were reported to COMJTFPP the following day. The Bosnia air drops concept of operations is illustrated in Figure II-1.

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4 UNHCR, WFP and other donor agencies were responsible for the costs and logistics of moving supplies from their origin to military warehouses in the vicinity of Rhein-Main Air Base. The U.S. military assumed the responsibility and costs of transporting supplies from these warehouses to the air base for rigging, loading and delivery.

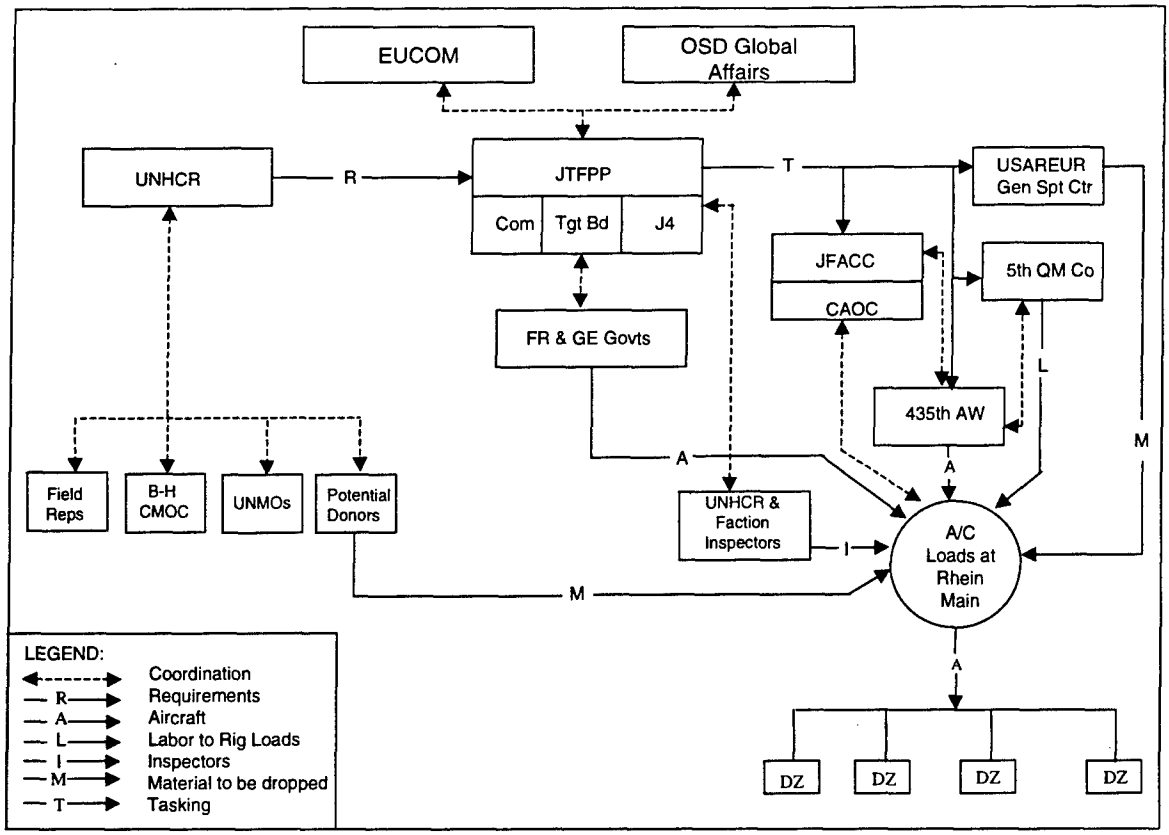

Figure II-1. Bosnia Air Drop Concept of Operations

B. COMMAND AND CONTROL; COORDINATION

On 1 February 1993, USCINCEUR established Joint Task Force Provide Promise, headquartered at Kelly Barracks, Stuttgart, Germany, "to provide a consolidated command and control structure for the increasing number of U.S. forces in the FY [former Yugoslavia]." Among JTFPP's missions were to "be the primary interface with UNPROFOR, UNHCR, US embassies, and other relief agencies as required."[5] Later that month, CJCS issued the planning order for air drops to the Bosnian enclaves. On 23 February 1993, USCINCEUR issued his corresponding order, delegating the air drop mission to JTFPP. In March 1993, HQ JTFPP relocated from Stuttgart to Naples, Italy.

Throughout the February 1993 to August 1994 period, when air drops were underway, COMJTFPP retained Operational Control (OPCON) of all U.S. forces operating in former Yugoslavia. COMJTFPP maintained close liaison with USEUCOM, the parent command, and the supported combatant command for this operation.

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5 *JTFPP Command Chronology*, p. I-1.

COMJTFPP maintained clear and direct control over air drop operations. Once the JTFPP air drop mission "target board," described above, screened UNHCR requests for missions, its recommendations were briefed to COMJTFPP before recommended missions were sent to the subordinate JFACC for detailed mission planning. After detailed planning was completed and missions were approved by the JFACC, "the entire mission was briefed to COMJTFPP for final approval."[6] Mission tasking and execution were directed by the JFACC to supporting units, such as the 435th AW. Once the flights were airborne, COMJTFPP delegated tactical control to JFACC. Tactical control was exercised by the JFACC, through the CAOC located in Vincenza, Italy. This command and control arrangement is illustrated in Figure II-2.

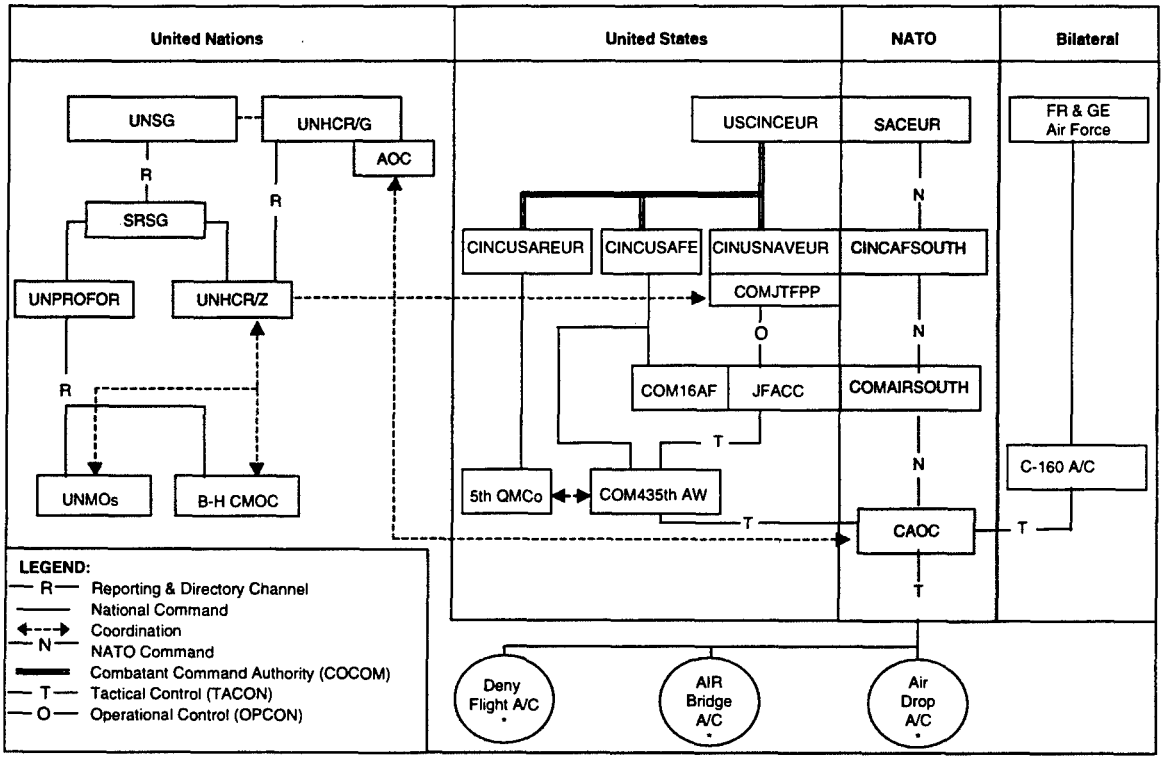

Figure II-2. Bosnia Air Drop Command and Control

Outside the core command and control architecture, the international and multinational nature of the operation resulted in the creation of additional coordination mechanisms. One such mechanism was the Air Operations Cell (AOC) set up in Geneva by UNHCR, with assistance from military staff officers from the U.S. and other nations (Canada, France, Germany and UK). This entity originated in the Sarajevo Airbridge operation. The objective of the AOC was to execute UN and UNHCR airlift policy for

6 Ibid., p. II-D-4.

the former Yugoslavia, and monitor all UNHCR air-delivered humanitarian operations. Additionally, the AOC coordinated UNHCR approval for all aircraft and passenger movements into Bosnia during this period.

A separate, and useful, outcome of coordination between the United Nations system and U.S. military units conducting the humanitarian air drops was clarification of the international legal status of air crews. Based on a statement of the UN High Commissioner for Refugees, aircrews performing air drop missions were regarded as "within the meaning of Section 22 of the Convention on the Privileges and Immunities of the United Nations of 13 February 1946." Although air crews were not considered to be UN officials under the terms of this Convention, they were issued identification documents by the UN and may have benefited from their status under international law in the event of a forced landing in territory controlled by warring factions.[7]

Close coordination on policy and operational issues among French, German and U.S. units engaged in air drops was managed through an informal high-level working group. This group met periodically, on an as-needed basis. The chief of staff, JTFPP, served as the U.S. representative to the working group, which was also staffed by flag officers from the French and German militaries. Each member nation of this ad-hoc coalition exercised a de facto veto over specific operations; if one nation's representative objected to a particular mission, that mission did not go forward.[8]

C. TECHNICAL ASPECTS OF *PROVIDE PROMISE* HUMANITARIAN AIR DROPS

In principle, air drop is a simple means of supplying relief assistance to populations in need. One merely has to navigate to the drop zone, push the relief supplies out the back of the aircraft, and let gravity do the rest. Indeed, many relief operations are conducted in exactly this fashion; double packaged bags of grain or other staples are tossed into remote areas from the ramp of a low flying aircraft. Unfortunately, the political, military, humanitarian and environmental circumstances surrounding a particular relief operation can greatly complicate the task of air drop delivery.

Operation Provide Promise, with its confluence of intransigent political-military factions, the presence of serious anti-aircraft threats, and emphasis on reducing risk to

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7 Sadako Ogata, Letter to Morris B. Abram, Permanent Representative of the United States of America to the United Nations Office at Geneva, 1 March 1993.

8 Jones, LTGEN James L., Interview, 6 May 1999.

aircrews, transformed the otherwise relatively simple air drop process into a formidable military and technical challenge to the U.S, German, and French aviators tasked with the relief missions. Indeed, initial resistance from within the military to the air drop mission was based in part on uncertainty as to whether it was actually possible to provide accurate delivery using tactics designed to maximize aircraft and aircrew safety. The ultimate success of the air drop operation hinged on both the technical capabilities of the air drop aircraft and the innovative tactics developed by the air and ground crews and riggers tasked with the mission.

Once air drop had been chosen to deliver relief supplies to Bosnia, the threat environment coupled with the level of acceptable risk drove the technical specifics of the operation. Three major tactical parameters that affect the complexity of air drop missions – delivery time (day or night), delivery altitude, and the level of defensive support required – were impacted by the need to maximize aircrew safety. The qualitative relationships among these factors across a spectrum of threat levels is illustrated in Figure II-3.

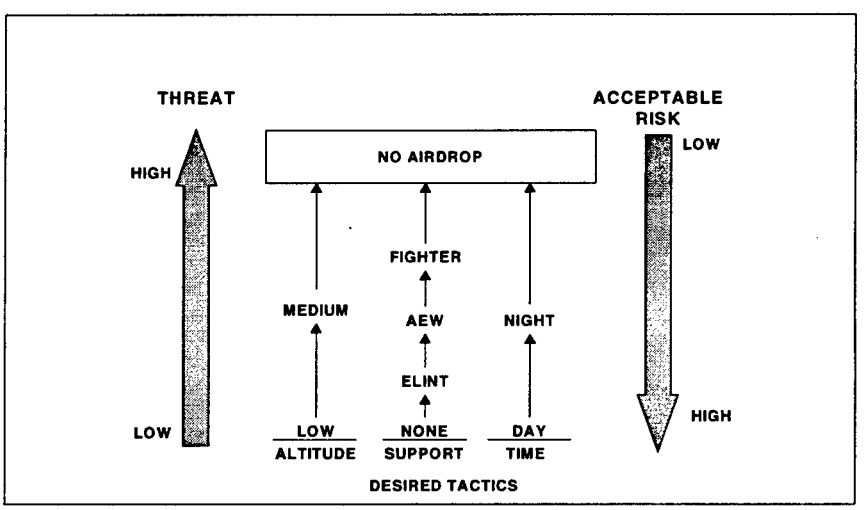

Figure II-3. Threat Influence on Air Drop Tactics

Historically, air drop operations had been conducted across the lower threat levels of the spectrum shown in Figure II-3. In non-hostile environments such as flood relief missions in Africa, air drops have merely involved pushing bags of grain from the ramp of C-130 aircraft flying a few feet above the ground during daylight hours. During the siege of Khe Sanh in the Vietnam conflict, the U.S. Air Force instituted blind air drops from low cloud cover to avoid the high risk of ground fire associated with landing at the U.S. Marine Corps outpost. Air Force C-130s were vectored over the Khe Sanh runway

by ground control operators and onboard doppler navigation computers. Interestingly, airland missions with Marine Corps C-130s and smaller USAF C-123 aircraft continued during the period of USAF C-130 air drops. Differing assessments of "acceptable risk" (both as a function of Service and aircraft type) resulted in this apparent inconsistency.

Operation Provide Promise represented the most stringent of situations, with a substantial potential threat and very low acceptable risk. The air drop tactics developed and employed for Provide Promise – nighttime deliveries from altitudes of no less than 10,000 feet – reflected that reality, and placed great stress on the ability to hit the desired drop zone accurately. Additionally, only C-130s equipped with adequate defensive systems were allowed to participate, and substantial support assets were always available for monitoring and/or assisting the air drop aircraft.

The sections that follow describe in greater detail why these tactics and support concepts were adopted, and what technical capabilities enabled effective air drops from much less than ideal flight profiles. The specifics of Provide Promise can serve as good examples of the tactics and systems that are necessary if one is to maintain a robust humanitarian air drop capability.

1. Air Drop Mission Tactics for Threat Avoidance

A key feature of a successful humanitarian air drop operation is the accurate delivery of relief supplies to the targeted population. The best way to ensure accurate delivery is to acquire visually the drop zone and release the supplies from a low altitude/low speed pass (or passes). Visual acquisition helps ensure the correct area is targeted, low altitude minimizes the effect of wind drift during the cargo's descent, and low speed minimizes the impact of errors in release timing. Unfortunately, a flight profile optimized for accurate air drop delivery is also optimized for threat forces attempting to shoot the aircraft down. Consequently, a robust air drop capability must include systems that enable accurate air drop deliveries from less vulnerable flight profiles.

a. Aircraft Flight Profiles

Typically, air drops are conducted during daylight hours from altitudes no greater than a few hundred feet. If risk reduction is the driving priority, drops from low altitude can only occur over secure areas because the aircraft is vulnerable to a wide array of anti-aircraft systems (and maybe even small arms fire). Figure II-4 shows the effective altitude for the primary threats to air drop aircraft operating over Bosnia. These missile

threats can be broadly separated into two classes: high altitude threats, which are usually radar acquired and guided, and medium to low altitude threats, which might employ radar or optical acquisition and radar or infrared ("IR") guidance. The means for dealing with these two threat classes are substantially different.

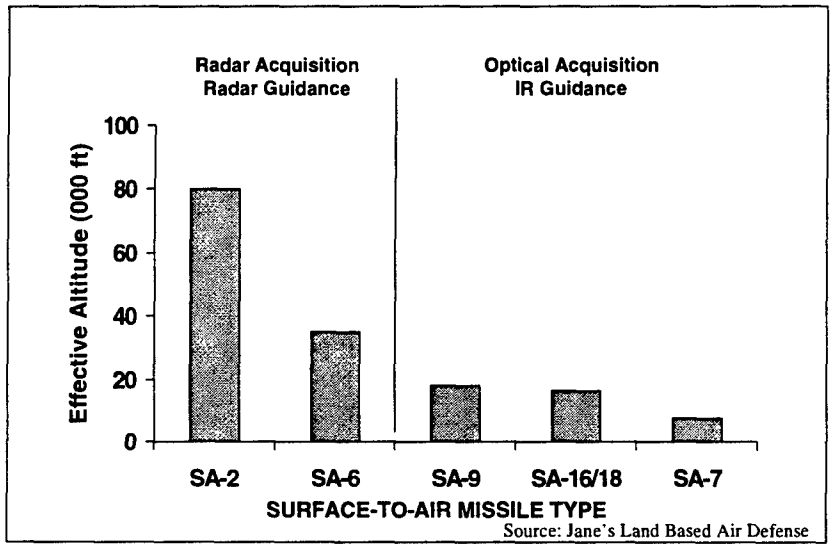

Figure II-4. Representative Threats to Air Drop Aircraft

From a pure system performance perspective, the most significant surface-to-air missile (SAM) threats in Bosnia were the radar guided SA-2 and SA-6. These systems were designed in the Soviet Union for use against high performance military aircraft. Slow transport aircraft wold be easy targets for these systems. With effective altitudes in excess of 30,000 feet, these threats could only be neutralized by avoidance, by removing the threat, or by diplomatic agreements that they would not be used against aircraft providing humanitarian assistance. Because these SAMs are major military assets, they tend to be under tight control of military authorities. Consequently, diplomatic agreements regarding their use or non-use may generally be considered meaningful. Despite this, however, Provide Promise aircraft avoided known SA-2 and SA-6 sites, and extensive intelligence and surveillance efforts to track them were conducted. Such tracking was especially difficult for the mobile SA-6. Air drop crews were instructed to abort their missions and exit the area at the first sign of SAM radar activity. Additionally, specific flight paths were varied as much as possible in order to minimize the chance that these SAM systems might be covertly positioned astride a known air drop aircraft route. This was particularly difficult to accomplish due to the restricted airspace and the close proximity of the Serbian border to many of the target enclaves.

Despite their more limited performance, the lower altitude IR SAM threats were actually more problematic for air drop planners. Of special concern were the shoulder fired SA-7 and SA-16/18, Eastern Bloc cousins of the U.S. FIM-92 Stinger missile system. These systems were of great concern because they were numerous, their locations could not be tracked, and they could be found in the hands of rogue individuals not under the control of any central military or political authority. One of these SAMs is thought to have downed an Italian G-222 transport over Bosnia in September of 1992 while the aircraft was conducting airbridge operations.

The nighttime, medium altitude air drop tactics were adopted to counter these SAM threats. The cover of darkness was important because these threats usually rely on visual acquisition. The operator must be able to see the aircraft in order to bring the narrow field of view seeker to bear against its target. Some hybrid systems can be radar cued, but radar signals would have alerted the aircraft to hostile intent from the ground. Operating above 10,000 feet AGL further complicated the visual acquisition process, and also placed the aircraft at the limits of the effective envelopes for IR-guided SAMs. This had the effect of significantly enhancing the time available for deployment of defensive countermeasures (e.g., flares) and/or evasive maneuvers in the event a SAM launch was detected.

The combined tactics of nighttime operation and medium altitude delivery had the desired effect. While conducting more than 2,700 sorties, no air drop aircraft was hit by ground fire. On several occasions small caliber anti-aircraft artillery (AAA) fire was reported, but these threats were most likely also reliant on optical acquisition and tracking, and hence failed to score any hits against their high flying targets.

b. Support Assets

While nighttime medium altitude flight profiles were adequate to neutralize the less capable air-to-ground threats, other threats were of concern to air drop planners. As was described previously, with regards to the high altitude SAMs, planners were unwilling to rely completely on political assurances and avoidance of known sites. Electronic intelligence (ELINT) support aircraft were present to provide warning of unexpected SAM radar activity. There were also potential airborne interceptor (AI) threats. In addition to tracking the air drop aircraft themselves, airborne early warning (AEW) aircraft were always monitoring for any hostile AI activity. Many of the Bosnian enclaves receiving air drop assistance were within range of airbases known to possess air-to-air capable threat aircraft. If needed, friendly fighter support was also available.

The support asset tail was very substantial. It may even have been greater than required if only the air drop operations were being conducted. In the case of Provide Promise, however, support assets were in theater to support other UN operations. Beginning in the Fall of 1992, NATO air assets, including AWACS aircraft, were providing technical support to UNPROFOR's efforts to monitor a no-fly zone in Bosnia. Beginning in April 1993, NATO launched Operation Deny Flight, in support of an expanded UN no-fly zone, providing aircraft for combat air patrol, air support, air defense suppression, and strike, along with airborne early warning, tactical reconnaissance, and intelligence collection capabilities. These substantial resources in theater were somewhat of a "free" asset from the perspective of the air drop planners. Future humanitarian air drop scenarios might not enjoy this luxury, and the burden of these support assets might be seen as a direct cost of such future air drop operations.[9]

2. Equipment and Systems for Accurate Air Drop Delivery

a. Air Drop Aircraft

At the time of the Provide Promise operation, the C-130 and the C-141 were the primary air drop capable aircraft in the USAF inventory. The C-5 was also air drop capable, but was too large to serve as an efficient platform for the types of humanitarian missions being conducted. Although the C-141 might technically have been a viable candidate for the operation, the smaller C-130 was compatible with the Bosnia missions, especially the small drop zones targeted. The C-130's payload, the payload's footprint from 10,000 feet, and the desire to minimize loiter time over the enclaves all aligned well with the small drop zones in the Bosnian enclaves. Consequently, the C-130 was the only U.S. aircraft type employed for the JTFPP air drops. [10]

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9 The UN Security Council passed Resolution 781 on 9 October 1992, creating a no-fly zone over Bosnia to ban military flights. In Resolution 816 of 31 March 1993, the Security Council expanded the no-fly exclusion to encompass all fixed- and rotary-wing aircraft, authorizing member states to use "all necessary means" to enforce the ban.

10 The availability of sufficient C-130 aircraft of the appropriate model from outside EUCOM's AOR was an issue identified early in the planning for air drop operations. EUCOM planners preferred that sufficient C-130s be OPCON to EUCOM for the duration of the mission, since that arrangement would facilitate long-term target planning. Since ongoing command and control realignments contributed to the issue of C-130 reallocation, the problem was solved through a long-term rotational system that gave EUCOM full asset control.

The newer C-17 transport is also a very capable air drop platform, but it was only just appearing in the USAF inventory as Provide Promise came to a conclusion. In fact, some of the earliest C-17 operational missions were in support of Operation Joint Endeavor, the follow-on Bosnian peacekeeping mission. In future operations, the C-17 may be the platform of choice, especially if longer distances must be traveled to reach the drop zones.

Figure II-5 illustrates some of the performance characteristics of these transport aircraft. In addition to USAF C-130s from USAFE's 435th Airlift Wing (AW) in Germany, French and German C-160 aircraft contributed to the Provide Promise air drops. Smaller than a C-130, the C-160 is a twin engine tactical airlift aircraft.

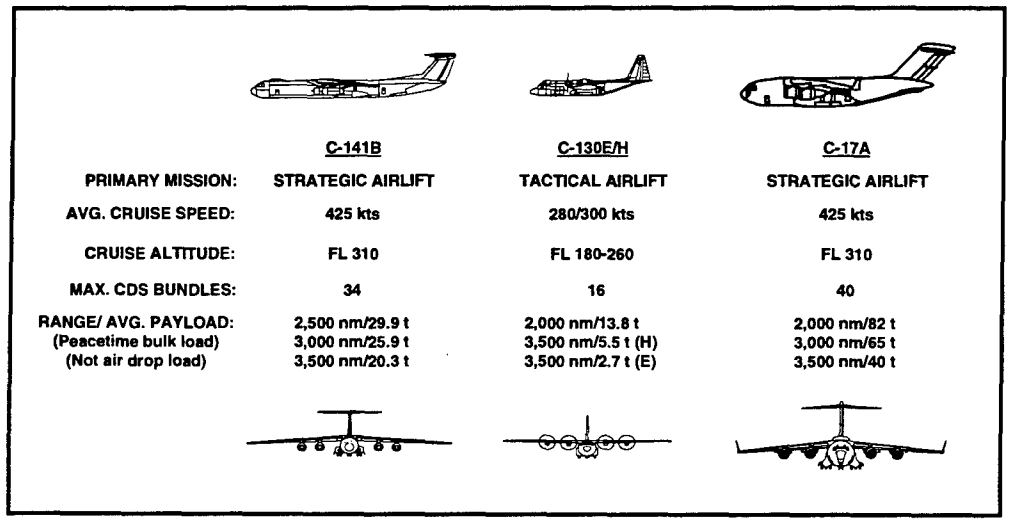

Figure II-5. U.S Air Force Air Drop Aircraft

b. Air Drop Bundles

Two air drop methods were employed during Provide Promise. Initially, all air drops used the standard USAF container delivery system (CDS). Each CDS consisted of about 1,200 pounds of relief supplies, a parachute, and shock absorbent material to ease the force of impact on the cargo. A C-130 dropping 12 to 16 CDS bundles could deliver 7 to 9 tons of relief supplies per sortie. The average air drop payload was about 7 tons, well below the 14-ton average payload for airland missions into Bosnia. The difference results from the fact that air drop bundles must be carefully loaded and positioned for smooth extraction from the aircraft, whereas airland cargo can be packed much more densely. Air drop bundles have the advantage of keeping the supplies together for easy collection on the ground, but the disadvantage of being hazardous to people and structures as they reach the ground. Consequently, CDS drop zones had to be near but

not actually in densely populated areas. This complicated collection by making the bundles more vulnerable to seizure by unintended parties, and individuals tasked with collection more vulnerable to attack.

The other delivery method was developed by riggers at Rhein-Main as a field expedient in response to these concerns. The Tri-Wall Aerial Delivery System (TRIADS) packaged individual meals in large cardboard boxes that would burst after exiting the aircraft. The meals (MREs or HDRs) would disperse and flutter to the ground.[11] This method is also known as "flutter delivery." Although the meals could impact at relatively high velocity, they were light enough to cause little or no collateral damage. TRIADS could be dropped right over populated areas, and their natural dispersion made hoarding or unintended diversion of the supplies less likely. On the down side, recovery was much more difficult (one meal at a time) and favored those physically able to search. CDS bundles could be more equitably distributed if recovered by responsible authorities. TRIADS was only suitable for supplies such as MREs. Large objects, fragile supplies or supplies destined for particular individuals (e.g., medical supplies) could not be flutter delivered.[12]

TRIADS had the added advantage of being much less expensive than CDS delivery. A typical CDS bundle cost approximately $750, while a TRIADS cost per drop averaged about $44. Since Operation Provide Promise, the U.S. Air Force and Army have adopted TRIADS as the standard practice for food packet air drop delivery.[13]

Eventually, the configuration and rigging of bundles became a standardized, if not routine, process. In the early stages of operations, however, the process demanded experimentation, innovation, coordination and development of unique logistics

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11 In part, the "flutter" is related to the effects of air pressure and temperature on the MREs during drops at medium altitude. These effects caused the MRE packets to expand to resemble what observers describe as a "pillow." The expanded MRE packets floated to the ground at reduced velocity. See Brooks, LtCol James J., USAF, *Operation Provide Promise: The JFACC's Role in Humanitarian Assistance in a Non-Permissive Environment; A Case Study*, paper submitted to the Naval War College, 14 June 1996

12 Some relief experts have theorized that TRIADS deliveries, combined with simultaneous CDS deliveries to the same target area, could serve as a diversion, drawing the most able bodied collectors away from CDS drop zones and improving the likelihood that CDS bundles would be retrieved by legitimate authorities. Although CDS and TRIADS drops were combined in Bosnia, there is no evidence that a conscious attempt was made to employ such diversionary tactics

13 Other authorities on air drops are not as sanguine about the safety of flutter drops. Based on experimentation with TRIAD-like systems, WFP logistics officers characterized high altitude "snow drops" of MREs as "dangerous" to those on the ground, equivalent to a two-pound weight striking at 60 miles per hour. (Interview with Pierre Carasse, Senior Logistics Officer, WFP, 5 February 1999)

capabilities. For example, members of the 5th Quartermaster Detachment were required to erect tents to serve as a rigging area, establish storage facilities on-site for air drop equipment, coordinate with German and French riggers, and obtain waivers from current air drop regulations in order to use available material for non-standard skid boards. The specialized nature of humanitarian air drops, incorporating a broad array of food and medical cargoes including fragile items, resulted in extensive experimentation with rigging procedures and packing materials. More than 200 individual rigging configurations were ultimately developed for the air drop missions, in order to protect supplies and maximize access. Prior to utilizing some of these configurations – especially those intended to maximize payloads – riggers consulted with engineers from the U.S. Army Natick Research, Development and Engineering Center. In several cases, test drops were conducted in coordination with the 37th Airlift Squadron.[14]

Of special note, the availability of parachutes and other essential air drop equipment had become a problem by early 1994. After JTFPP used more than 21,000 G-12 parachutes – mostly World War II surplus – during the first nine months of the air drop operation, USAREUR reported that theater stocks were nearly exhausted. To compound this problem, manufacturers were producing only a limited number of new G-12s at that time. Shortages in parachutes and other rigging equipment – and the practical unfeasibility of retrieving these critical items – required riggers to adapt operations to substitute items, slowing the tempo of operations, and, in some cases, limiting operations.[15]

c. Essential Mission Systems for Air Drop Aircraft

The USAF has an inventory of approximately 500 combat delivery C-130s. Although these aircraft come in two primary variants, the E Model and the H Model, individual squadrons and even aircraft within squadrons have a wide variety of different mission systems. This yielded a much smaller subset of aircraft able to conduct air drops over Bosnia. For example, not all C-130s were equipped with adequate defensive systems (e.g., missile warning systems, chaff and flare dispensers). This limited the operational flexibility of the air drop planners. The Air Force is currently exploring

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14 See Williams, CPT Brian L., et al., *Operation Provide Promise: The Airdrop Phase*, Quartermaster Professional Bulletin, Autumn, 1993

15 USAFE, *1994 Provide Promise USAFE History* (U), 11 July 1995, p. 431

options for modernizing and standardizing all C-130 E and H model aircraft, so this problem may not exist in the future.

The most critical piece of mission equipment was the All-Weather Air Drop System (AWADS). The AWADS radar locates the drop zone relative to the aircraft. That information, coupled with airspeed, altitude, and heading, enabled navigators to calculate and hit the appropriate cargo release points. Currently, only 50 C-130E aircraft are equipped with AWADS. The AWADS was essential for drop zone acquisition at night from medium altitudes. An AWADS equipped C-130 aircraft would act as a pathfinder and would lead each group of aircraft. The AWADS equipped crew would locate and identify the drop zone, and relay the Global Positioning System (GPS) coordinates for cargo release to other aircraft in the group. Because not all C-130s or C-160s were equipped with GPS, some crews used hand-held GPS receivers to locate and time their cargo release points. Technically, the aircraft did not fly in formation, but they were in continuous contact.

d. Other Systems and Tactics

While the combination of AWADS as pathfinders and GPS for navigation enabled the calculation of simple ballistic release points, the air drop bundles were still subject to wind drift during their long descent to the ground. To help mitigate this problem, other aircraft operating at lower altitudes submitted wind data to the air operations center where it was processed and relayed to the air drop aircraft. The wind data enabled the crews to calculate refined release points. The U.S. Air Force is investigating systems that would enable air drop aircraft to measure winds without reliance on external sources. Two promising candidates are an Aircraft Mounted Laser Radar (LIDAR) system that can detect particle motion in the air column beneath the aircraft, and GPS equipped pathfinder parachutes that would relay drift information back to the aircraft.

D. DESCRIPTION OF CARGO

U.S. and allied aircraft dropped four main categories of relief supplies during Operation Provide Promise: food, medical supplies, "winterization" material, and seeds.

Food was the largest category of air dropped supplies, about 94 percent of the approximately 18,000 metric ton total. Two categories of food supplies reached the Bosnian enclaves: "bulk" food, and prepacked individual meals, including both MREs and HDRs. Bulk food included sacks of wheat flour and sugar, pulses (beans, peas,

lentils), dried whole milk, canned meat, biscuits, salt, and similar items, and also containers of cooking oil. As a liquid commodity, cooking oil required special packaging by riggers to ensure that the containers would not break upon impact, spilling the oil.[16] Empty plastic bags were included with bulk food items, both to permit recovery of spills and to allow recipients to break down bulk food into smaller quantities for ease of handling.[17] Of interest, some plastic bags were also used by the Bosnian civilians as "winterization" supplies (see below).

Medical supplies included bulk products like bandages and extremely delicate items like vials of penicillin. Surgical supplies and medicines were the primary medical supplies delivered by air drop. Medical supplies made up approximately 1.5 percent of the total tonnage provided by JTFPP to the enclaves, but were the most difficult and most expensive to rig for air drops.

"Winterization" supplies were added to air drop cargoes beginning in December 1993. By the winter of 1993-94, international relief agencies were familiar with the severity of the Balkan winters and the need for heavy clothing and bedding to survive the cold weather. Damage to homes and heating systems, as well as fuel shortages, meant that Bosnian civilians trapped in the enclaves would face special difficulties in coping with low temperatures and precipitation. These problems were exacerbated by the chronic inability to reach humanitarian food delivery targets in most areas; the majority of relief recipients, therefore, were underweight, with reduced resistance to cold and disease.[18]

Winterization equipment included items such as bulk rolls of heavy-duty plastic sheeting (to effect emergency shelter repairs), candles, blankets, sleeping bags, and winter clothing. Winterization material was delivered during the January to March 1994 phase of the air drop operations, making up 3 percent of total deliveries, by tonnage.

The fourth category of relief supplies was seeds. Civilian relief organizations working in Bosnia had observed that even besieged enclaves were capable of producing a

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16 Delivery of dry bulk food supplies like grains, pulses and flour during humanitarian operations is almost always accompanied by the delivery of vegetable oil products. This cooking oil is essential to the preparation of meals from the dry bulk commodities, and adds required calories to the overall food ration.

17 Williams, CPT Brian L., et al., "Operation Provide Promise: The Air drop Phase," *Quartermaster Professional Bulletin*, Autumn, 1993

18 The humanitarian winterization program is described in detail in the UNHCR document *Updated UNHCR Winterization Programme in the former Yugoslavia*, 1993-94, 2 November 1993.

sizeable portion of their nutritional needs if they had access to agricultural inputs like seeds, tools, and fertilizer. Moreover, the UNHCR observed that both relief workers and residents considered farming and gardening to be significant morale boosters for isolated, besieged communities. Seeds for vegetable gardens and commercial crop production had been delivered to the enclaves by truck in the Spring of 1993. Beginning in March, 1994, they were air dropped as well. Seeds accounted for about 1.5 percent by weight of the air dropped supplies.

E. PHASES OF THE OPERATION

Air drop operations began 28 February 1993 and ended 19 August 1994. This section briefly describes the four phases of Provide Promise – Start-up, Fully Operational, Intensified Operations, and Phase-down – summarizing the shifts in targets, cargo, capabilities, and other elements that affected operations.

1. Start-up Phase

During the period February through March 1993, JTFPP completed planning for the air drop operation, began operations in a limited number of sites with limited quantities of supplies, refined coordination and delivery methods, and expanded the operations, while incorporating French and German aircraft into the missions.

The CJCS issued a planning order for emergency air drops of humanitarian supplies on 22 February 1993. On the following day, USCINCEUR issued its warning order, delegating the mission to JTFPP. On 26 February, CJCS issued the execution order for air drop operations. The period between 22 February and the first drop on 28 February included a period of intense discussion with the UN on command and control issues, and on the issue of tripartite inspection of the cargoes at Rhein-Main. A decision was also reached that fighter escort would not accompany cargo flights over the drop zones.

As operations commenced, three C-130s delivered cargoes of limited size, with all planes flying to the same enclave, initially Cerska. Missions quickly increased in both delivery capacity and numbers of targets, however. By the end of the start-up phase (28 February to 31 March 1993), five different enclaves had received significant amounts of humanitarian supplies, and two or three different locations were being reached each night. The start-up phase of the operations saw experimentation in several areas,

including cargo configuration, and bundle weight and packaging.[19] In addition, crews developed techniques for enhancing target accuracy (see "Technical Aspects," above). French and German aircraft joined the operation during the start-up phase, a process that did not appear to involve major coordination problems.

Other significant developments during the start-up phase included, first, scattering of food supplies and, second, standardization of relations with civilian agencies. JTFPP made an early decision (in March) to deliver some food supplies using the TRIAD or "flutter drop" technique, which scattered individual MREs over a large area. Incorporation of the TRIAD mechanism into the delivery system – in order to reduce collateral damage and casualties, and to increase the equitable distribution of supplies among civilians within the enclaves – was an early indication of JTFPP's capacity to adjust operations based on feedback, albeit limited, from the target area.

The second significant event during the start-up phase was the development of a standardized request and tasking procedure with UNHCR. At the beginning of the operation, important questions arose regarding how humanitarian needs assessment within the enclaves would be linked to air mission selection, and how assessed need would be balanced with force protection. During the start-up phase, these issues were resolved through the tasking process described under "Command Structure," above.

2. Fully Operational Phase

From April through November, 1993, the mission became, in the words of JTFPP's *Command Chronology*, "a systematic re-supply effort." Standardized operating procedures permitted a steady delivery of approximately 1,100 metric tons per month to a total of eight different enclaves. During this period loaders and riggers continued to refine techniques, and humanitarian daily rations were introduced (in October, 1993) as a substitute for MREs, as readily available supplies of the latter dwindled.

Target locations were reconfigured during this phase of the operations, requiring additional efforts by planning staffs, in order to site drop zones and maintain high standards of force protection. By May 1993, deteriorating relations between Bosnian Croat and Bosnian Muslim (government) forces led to open warfare between the factions. This political-military shift in Bosnia further restricted convoy traffic, virtually cutting

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[19] An especially critical cargo packaging issue was the configuration of medical supplies in air dropped pallets, to ensure the survivability of these often fragile items.

off the enclaves of Maglaj, Tesanj, and eastern Mostar. These three towns became the new focal points for JTFPP air drops in August of 1993.

3. Intensified Operations Phase

By Fall of 1993, humanitarian agencies were becoming increasingly concerned about the survival of beneficiaries during the coming winter. Not only were relief delivery targets un-met in most regions of Bosnia, but many civilians were in declining health after enduring two winters of hardship. According to humanitarian assessments, fatalities would increase significantly in a harsh Balkan winter, barring better success in attaining supply targets. Beyond food and medicine needs, recipients – especially in the besieged pockets – would require "winterization" supplies, including warm clothing, candles, shelter material, and bedding.

In response to these predictions, the U.S. Secretary of State announced in November a significant increase in U.S. assistance. On 8 December 1993, CJCS authorized an increase in U.S. assets supporting the air drop mission and the size of the relief operations started increasing that same month, exceeding 1,300 MT by 31 December. By January 1994, U.S. and allied aircraft were flying 16 sorties per night, doubling the previous rate. From January through March, approximately 2,200 metric tons were air dropped per month. Nine different areas were targeted during this period of intensified operations.

4. Phase-down

In the Spring of 1994, the arrival of warmer weather, an apparent short-term increase in the effectiveness of UNHCR convoys, dwindling stocks of air drop equipment and the escalation of the Rwanda crisis led to a reduction in air drop operations in Bosnia. Only 23 sorties were flown in April, with the number falling to ten in May and five in June. Although the air drop option remained open, it was not employed extensively in Bosnia-Herzegovina throughout the remainder of the conflict

An interesting element of Operation Provide Promise air drops was their relatively unstructured phase-down. There is no indication that either JTFPP or UNHCR made a conscious decision in the Spring 1994 time period, based on the achievement of an agreed-upon end state, to terminate air drop missions. In retrospect, air drop operations in Spring of 1994 appear to be characterized by entropy, as preoccupation with other manifestations of the Bosnian conflict took center stage. Although the effectiveness of UNHCR convoy food deliveries dropped dramatically between May and

August of that year, air drop operations were not re-started, even when the enclave of Bihac suffered severe deprivation.

In Bihac, intra-Muslim fighting and assaults from besieging Bosnian Serb forces caused enormous suffering by civilians in 1994 and 1995. By January, 1995, UNHCR reported that 15 percent of minimum food deliveries were reaching Bihac, and even patients at the hospital were receiving only one meal per day.[20] However, the pocket was ringed by what JTFPP described as an "integrated air defensive system ... strategically located near the vicinity of Bihac," comprised of "concentrated AAA and SAM batteries."[21] After negotiations between UNPROFOR and Bosnian Serb forces convinced COMJTFPP that air operations could be safely conducted, air drops to Bihac were conducted for 9 days, between 11 and 19 August 1994. Despite repeated calls by UNHCR for air drops to Bihac after August, no further missions were approved by COMJTFPP.

In UNHCR's eyes, the air drop option remained open until at least December 1994. When Bosnian Serb forces sealed off Srebrenica to truck convoys between 17 November and early December of that year, UNHCR requested an air drop into the pocket. The arrival of a convoy on 6 December alleviated the immediate need for air drops.[22] However, in the JTFPP view air drops terminated in August 1994.

F. COST OF AIR DROP OPERATIONS

Air drops are generally considered the most costly method of delivering relief supplies. The actual per-ton cost during air drop operations depends on numerous variables, including distance flown, type of aircraft, method of drop (parachute, free drop, others), required logistics "tail," and other factors.[23]

In general, air drops are estimated to cost three to four times more than similar deliveries by truck, the most common form of relief delivery.[24] This high cost per ton delivered is related both to the inherent costs of air operations and to the relatively small payload a single aircraft can deliver compared to trucks. The relief expert Fred Cuny

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20 UNHCR, *Information Notes on former Yugoslavia*, February 1995.

21 JTFPP, *Command Chronology*, p. II-D-7.

22 UNHCR, *Weekly Information on Former Yugoslavia*, 5-12 December 1994, p. 3.

23 Carasse, *interview*.

24 Interview with David Hagen, Division Chief, Emergency Response Operations, Food for Peace Office, U.S. Agency for International Development, 4 March 1999.

noted that, in Ethiopia for example, a C-130 carried about half the cargo of a large grain truck available for hire on the local market. Cuny reported that "the average cost of one flight equaled that of leasing a grain truck and fueling it for six months. For the price of several flights, a good truck could have been bought."[25] JTFPP staff noted a similar ratio, reporting that "re-supply by a ground convoy of only ten trucks could deliver more supplies than sixteen air drop sorties."[26]

Cost comparisons between air drops and airlift operations are less definitive. The WFP estimates that C-130 air drop operations add up-front costs of approximately $50 per ton compared to airlift of similar relief commodities. The additional cost increment is related to pallets, triple-bagging for free drops, and re-bagging operations once supplies are on the ground. However, this $50 per ton increment may be offset in certain operations by secondary costs associated with airlift. Offsetting costs might include transport expenses (from the airfield to the beneficiaries), additional aircraft maintenance charges (related to operations on marginal airfields), reduced aircraft productivity (related to limited airfield slots or flooded runways), and other factors. On balance, WFP research indicates that cost comparison between air drop and airlift modalities depend on the specifics of the case.[27]

In Bosnia, the cost per ton of relief supplies air dropped into the enclaves can only be approximated since cost data were kept in a number of formats during the period of operations.[28] Using an overall air drop operations cost number reported by DoD to OFDA in FY1994, and estimating the total tonnage delivered by U.S. air drops for the same period, a delivery cost per ton of approximately $2,800 can be computed. However, since it is not possible to reconstruct the assumptions that went into the DoD cost estimate at that time, the $2,800 per ton figure should be viewed as an order of magnitude estimate rather than a precise calculation of costs. Of special note, it is not

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25 Fred Cuny, *An Assessment of Airdrops in Relief Operations*, unpublished paper, 1994, p. 4.

26 *JTFPP Command Chronology*, p. II-D-6.

27 Pierre Carasse, *Airdrop versus Airlift*, WFP Memorandum, 6 February 1998.

28 The difficulty of obtaining precise incremental costs for humanitarian operations was noted by the General Accounting Office in a 1996 report on recent peace operations: "It is not possible to provide DoD's final costs for these operations. As we have reported previously, DoD's financial systems cannot reliably determine costs of specific operations. Data on obligations are generated by individual military units that report up the chain of command. The individual services then use various management information systems to identify incremental costs, but an overall system is not in place to capture actual incremental costs." United States General Accounting Office, *U.S. Costs in Support of Haiti, Former Yugoslavia, Somalia, and Rwanda*, Letter Report GAO/NSIAD-96-38, 6 March 1996, p. 4, footnote 4.

clear whether the DoD cost estimate in 1994 incorporated the cost of force protection elements (AEW, ELINT, fighter aircraft) concurrently operating in the theater in support of other operations.[29] Given the uncertainty about whether all costs of the air drops were captured in DoD reporting to OFDA, the per-ton cost of $2,800 should probably be viewed as a low-end estimate.

To place the $2,800 per-ton estimate in some context, ongoing World Food Programme air drop deliveries from northern Kenya into southern Sudan cost approximately $800 to $1,000 per ton of food delivered. Relief experts consider the southern Sudan air drop program (which is described in more detail later in this report) to be a very high cost humanitarian assistance operation.[30]

If the estimate of $2,800 per ton delivered in Operation Provide Promise is accurate, the U.S. portion of air drop operations from February 1993 to August 1994 cost a minimum of $40 million. This cost figure does not include DoD's expenses of providing 10.3 million MREs ($46.92 million) and 1.94 million HDRs ($7.6 million), both of which were used in the air drops, as well as the air bridge operations to Sarajevo. (MRE and HDR costs were reported separately to OFDA.)[31]

DoD reported to GAO incremental costs in support of Former Yugoslavia peace operations for FY93 and FY94 of $330.8 million. This figure includes humanitarian air drops, the Sarajevo airlift, operation of the field hospital in Zagreb, and enforcement of the no-fly zone over Bosnia. That is, it appears that direct air drop operation costs accounted for approximately 12 percent of DoD's total humanitarian expenditures in Bosnia. Once again, however, this cost estimate should be considered a minimum estimate of expenses for air drop operations configured like those in Bosnia. JTFPP air drops relied heavily on C3 capabilities already established in the theater, on international and civilian coordination mechanisms developed for Sarajevo air bridge operations, and

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29 IDA used the following methodology to arrive at the per-ton cost estimate for JTFPP air drops. In May 1994, OFDA reported DoD expenditures of $21.7 million as the "cost of airdrop operations" since the beginning of FY1994 (see OFDA Situation Report #17: *Former Yugoslavia – Civil Strife*). Taking this number as a base, and computing the approximate tonnage air dropped by U.S. military aircraft between 1 October 1993 and May 1994 (7,845 MT), yields a per-ton cost of $2,779. This estimate assumes that costs remained constant over the period of the air drops. This estimate also assumes that the air drop costs captured by OFDA from DoD included associated costs for the logistics tail and force protection tail of the operation.

30 David Hagen, Division Chief, Emergency Response Operations, Food for Peace Office, U.S. Agency for International Development, interview, 4 March 1999.

31 OFDA, *Former Yugoslavia – Civil Strife*, Situation Reports Number 14 through Number 18, passim.

especially on force protection assets already deployed in or near Bosnia for pre-existing missions.

CHAPTER III

EVALUATION OF OPERATION PROVIDE PROMISE AIR DROPS

III. EVALUATION OF OPERATION PROVIDE PROMISE AIR DROPS

A. ASSESSMENT OF THE IMPACT ON TARGET POPULATIONS

This study finds that U.S. air drops into the Bosnian enclaves in 1993-94 significantly aided the target populations, both materially and psychologically. It is not possible to measure the precise value to recipients of the air dropped supplies because other humanitarian and commercial commodity deliveries were occurring simultaneously.

As to meeting the material needs of Bosnian civilians, JTFPP assistance was limited but important. Air drops materially assisted in two ways: (1) air drops added an important increment to the total quantity of supplies reaching several enclaves in 1993-94 (during some intervals, air drops were the only method of delivering assistance); and, (2) in at least some instances, air drops may have altered the local political environment enough to result in increased access for road convoys.

The tonnage contributed by air drops to the total humanitarian requirement in Bosnia was small: 18,000 metric tons out of a total estimated need of 532,000 metric tons of food aid alone between February 1993 and April 1994. But for specific locations at certain intervals, JTFPP air drops were critical. No overland relief convoys reached the Maglaj pocket, for example, from October 1993 to March 1994. During that period, U.S. and allied aircraft dropped 2,019 metric tons of food, medicine, and winterization supplies to this primary Muslim enclave. When a public health expert from the U.S. Centers for Disease Control and Prevention (CDC) visited the pocket in March, he reported no overt signs of widespread malnutrition. According to a report from OFDA, "The U.N. food air drops were cited as having maintained the population's nutritional status during the five-month hiatus in convoy deliveries."[1]

Muslim residents of the city of Mostar suffered a similar period of isolation and deprivation in Summer of 1993. No UNHCR convoys reached the city from June until

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[1] OFDA, Situation Report #17, *Former Yugoslavia – Civil Strife*, 20 May 1994, p. 2.

late August. UNPROFOR observers entering the city on 21 August described a population suffering from desperate food shortages.[2] UNHCR and JTFPP responded quickly to the discovery, dropping 132 metric tons of food to Mostar before the end of August, and an additional 241 tons in September.

This study examined the degree to which air drops contributed to the survival of civilian populations within the Bosnian enclaves; that is, whether the increment of food, medical supplies, and blankets delivered by JTFPP air drops made the difference between life or death and, if so, for how many people. Although it is clear that the air drops made "a tremendous difference," quoting a senior UNHCR official, it is not possible to say whether air drops made "the difference" in the survival of the enclaves and their inhabitants.[3] Besides air drops, a large number of factors – intermittent convoy deliveries, smuggling, local food production, sharing or bartering within the enclaves, diversion of supplies to enclave military units, and weather conditions – determined how much relief got into the hands of needy civilians in the Bosnian enclaves.

In relief operations, a standard operating procedure governs the assessment of humanitarian needs and the fulfillment of those needs. The population that has suffered a natural or man-made disaster is surveyed by relief workers to determine (1) the census, (2) the shortages of water, food, medicine, and other essentials, (3) sub-groups of the population (infants, pregnant women) requiring special assistance; (4) local capacity to deal with the shortages, and (5) assistance available from other sources. This initial assessment establishes baseline data (average weight, incidence of disease, mortality rate, etc.), which are then monitored regularly over time to determine if the relief operations are successful. Assessment data are used to generate demand for relief supplies, i.e., to "pull" specific supplies into the disaster area to meet specific shortfalls facing the civilian population, and to target those relief supplies to the most needy civilians. Assessment data and regular monitoring also serve to determine when normal conditions have been restored, as a signal to end relief operations.[4]

In the Bosnian enclaves in 1993-94 the standard operating procedures described above were not in place. Quantifiable data and baselines were not available for the

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2 OFDA, Situation Report #13, *Former Yugoslavia – Civil Strife*, 9 September 1993.

3 David Riley, Former Deputy Chief of Mission for Bosnia, UNHCR, Interview, 22 September 1998.

4 Office of U.S. Foreign Disaster Assistance, *Field Operations Guide for Disaster Assessment and Response*, FOG Version 2.0, 1994, pp. II-1 to II-43, passim.

enclaves. Objective international relief workers either were not present in all the sites, or their travel was restricted in those enclaves where they were present. Monitoring of relief supply distribution and of changes in nutritional or health status was a-systematic. The rough data that were available to the UNHCR did generate estimates of need, which were correlated with convoys dispatched to the enclaves. But since it was never certain if convoys would reach their objectives, the "pull" system for relief supplies operated only imperfectly.

In this environment, air drops were used to fill the gaps in Bosnia; i.e., to push desperately needed categories of supplies into the enclaves suffering the worst shortfalls. Bosnia-wide, air drops added approximately 4 percent to the total volume of food delivered by relief agencies in 1993-94.[5] Since there were no documented cases of death by starvation in Bosnia during the period of the air drops, it is not possible to say that the air-dropped increment of food or other supplies actually prevented starvation deaths. It is possible to say – based on reliable eyewitness accounts by Bosnians and international relief workers – that the air drops significantly reduced horrific human suffering from hunger, cold, illness, trauma, and deprivation. For particular enclaves, during periods when they were completely cut off from truck access, food and critical medical supplies provided by air drops may have saved lives. [6]

Besides directly aiding civilian victims of the Bosnian war, JTFPP air drops may have benefited those trapped in some enclaves indirectly by increasing access for road convoys, in certain limited instances. In the period February-March 1993, UNHCR increased measurably its ability to meet food aid targets in Bosnia, immediately after U.S.

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5 The 4 percent number is based on UNHCR data on total food requirements in Bosnia from February 1993 through April 1994, on total deliveries of food assistance monitored by the UN, and on data on air drops of food during this same period. This calculation excludes data for Sarajevo, where a consistently higher percentage of emergency needs was met due to regular airbridge operations.

6 The question of starvation deaths in Bosnia is difficult and disputed. OFDA was reporting in its 19 March 1993 Situation Report that "In the eastern Bosnian towns of Srebrenica, Konjevic Polji, Cerska, Kamenica, and Gorazde, cut off from regular food aid deliveries, people have reportedly died of starvation." However, no independent reports confirm starvation deaths in any location in Bosnia during 1993-94. In several instances, reports of grave malnutrition were later found to be exaggerated. OFDA reported in March 1994 that "UNHCR estimated prior to entering Maglaj that 30 percent of Maglaj's population was malnourished.... Preliminary observations from March 20 lead UNHCR to report that the desperate conditions may have been slightly overstated." Deaths related to food shortages and deprivation undoubtedly occurred in Bosnia during its long and brutal conflict. Dozens of porters died transporting food relief supplies overland between Grebak and Gorazde in the Winter of 1992-93; 10 deaths were confirmed when people were crushed to death in a desperate stampede to board trucks to escape the deprivation in Srebrenica in March 1993; hundreds of Bosnians weakened by undernourishment likely died due to illness or shortages in medical supplies.

air drops were started, as shown in Figure III-1. This surge in convoy deliveries was widely reported at that time, with relief workers noting an "amazing change of heart" among Serbian commanders blocking relief convoys. A newspaper account from February 1993 states: "In the past three days, since reports of the United States air drop plan first began circulating, the Serbian forces have cleared the convoy to Zepa and said they will allow another one on Wednesday, to Gorazde, a Muslim town with 70,000 inhabitants that has been shut off for more than two months."[7]

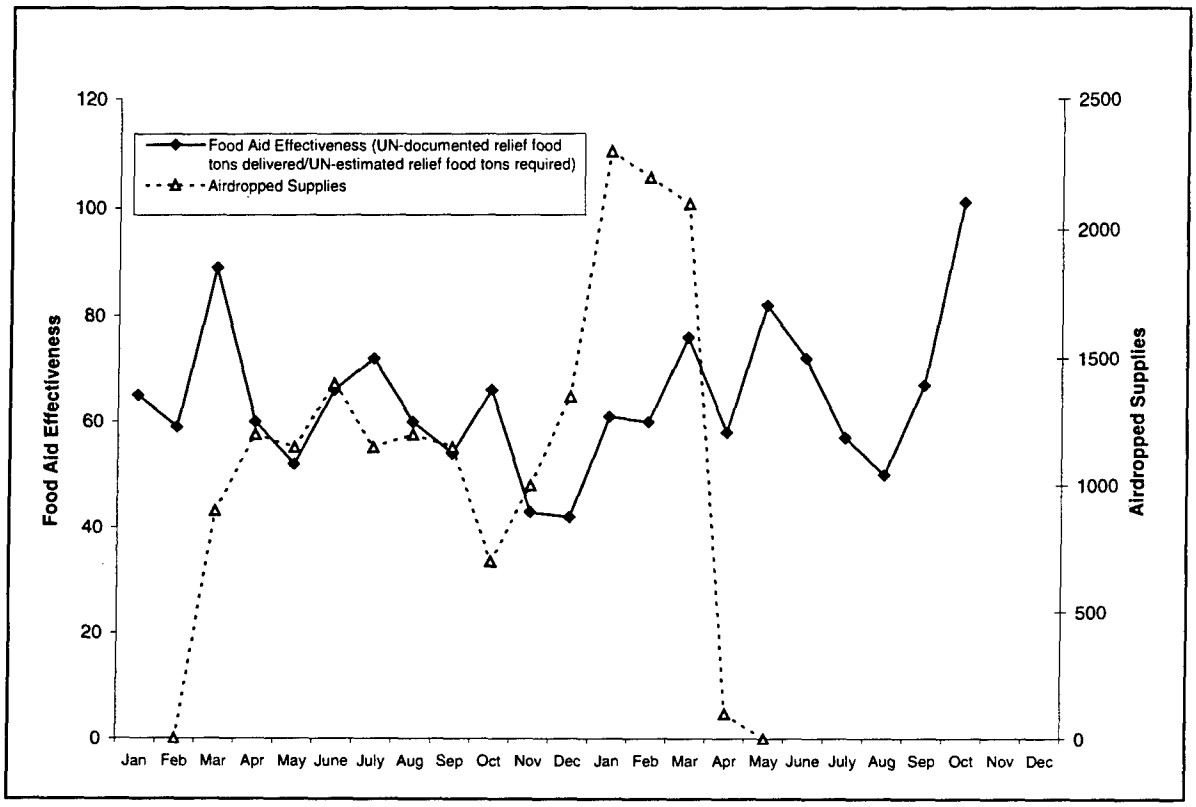

Figure III-1. Comparison of Food Aid Effectiveness

However, the overall pattern of relief deliveries in Bosnia during the 1993-94 period, displayed in Figure III-1, does not suggest that air drops dramatically increased convoy effectiveness overall. Other important variables impacted on humanitarian effectiveness during this period. The general decline in relief deliveries between Spring 1993 and the end of 1993, for example, is largely accounted for by the increase in Muslim-Croat fighting during that period, which severed transportation routes across Central Bosnia.

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7 John F. Burns, "Serbian Commander in Bosnia Says U.S. Airlift Will Intensify War," *The New York Times*, 24 February 1993.

On the other hand, localized correlations between air drops and convoy access seem to have occurred in some areas. Figures III-2, III-3 and III-4 compare the quantities of air dropped supplies and convoy delivered supplies into Zepa, Gorazde, and Srebrenica, respectively, from late 1992 to Spring 1994. The patterns in these graphs suggest that each surge in air drop operations to the enclaves was followed by a sustained increase in convoy access. Other variables, like the declaration of Srebrenica as a UN safe haven in April 1993, are likely to have contributed to the correlation effects noted. However, the consistency of the pattern among Zepa, Gorazde, and Srebrenica suggests that intensive air drop campaigns mounted by Operation Provide Promise may have been a contributing factor to subsequent success of road convoys, even if the exact nature of the linkage remains uncertain.

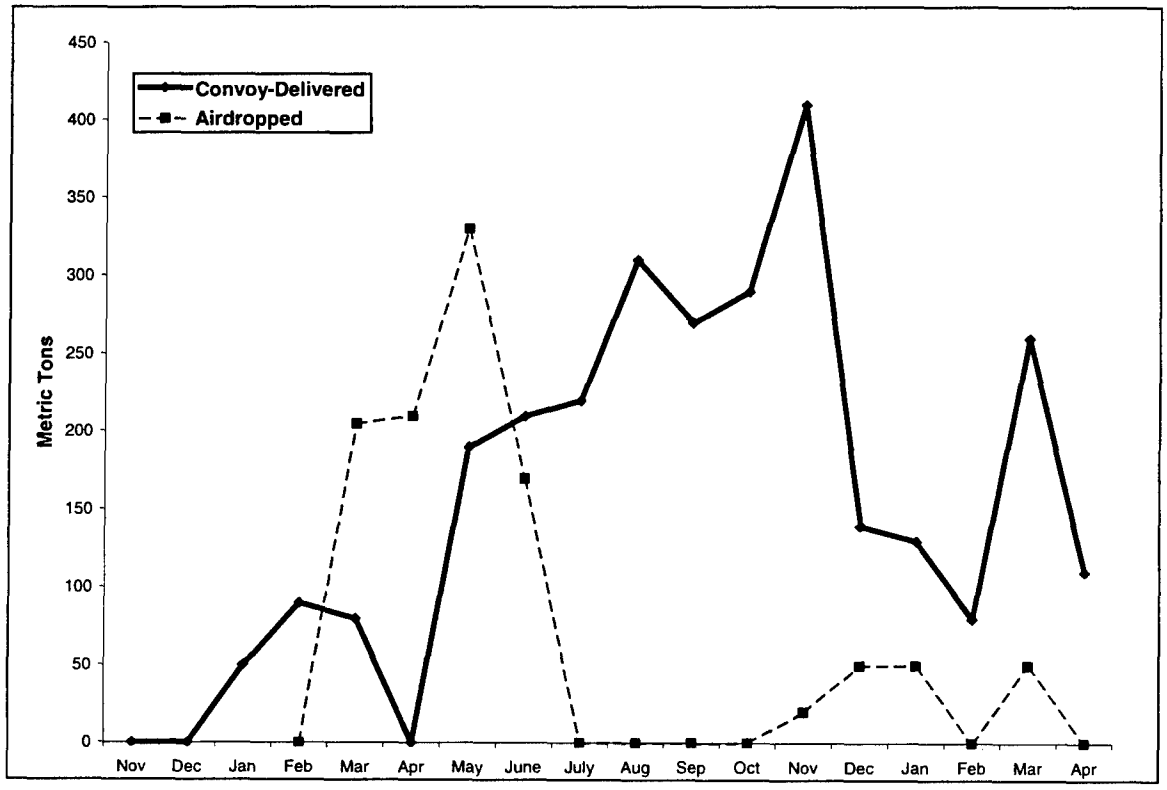

Figure III-2. Comparison of Convoy-Delivered Aid

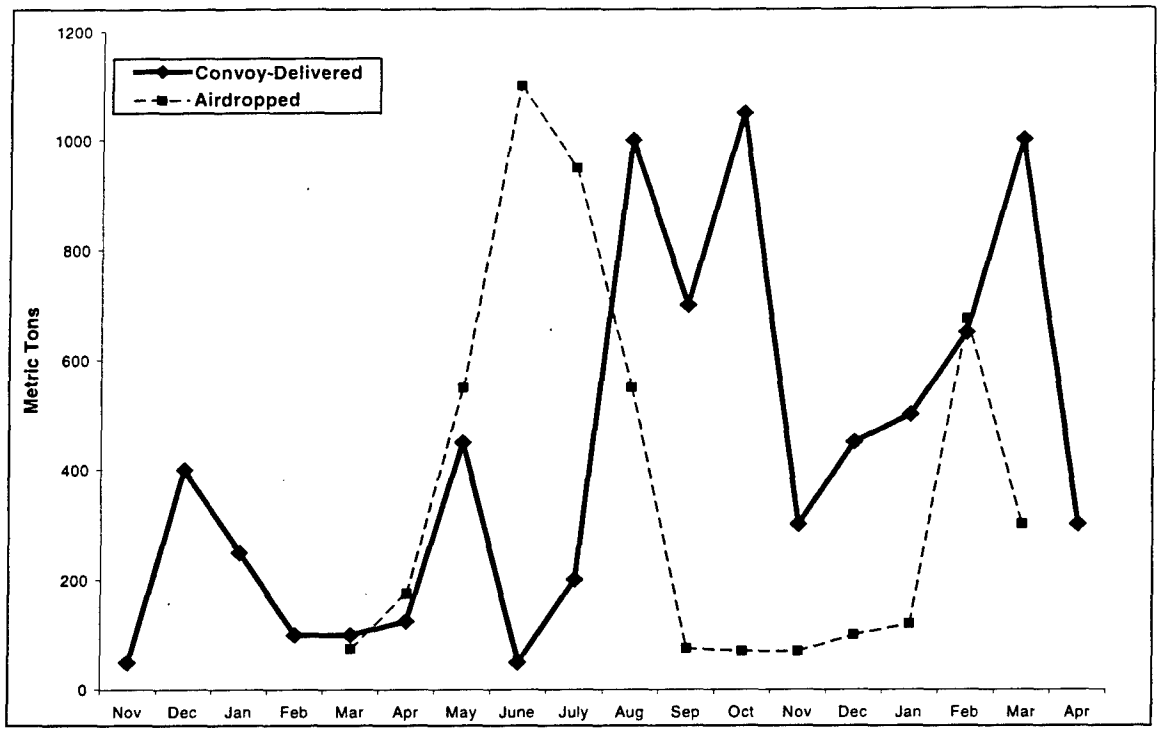

Figure III-3. Comparison of Convoy-Delivered Aid

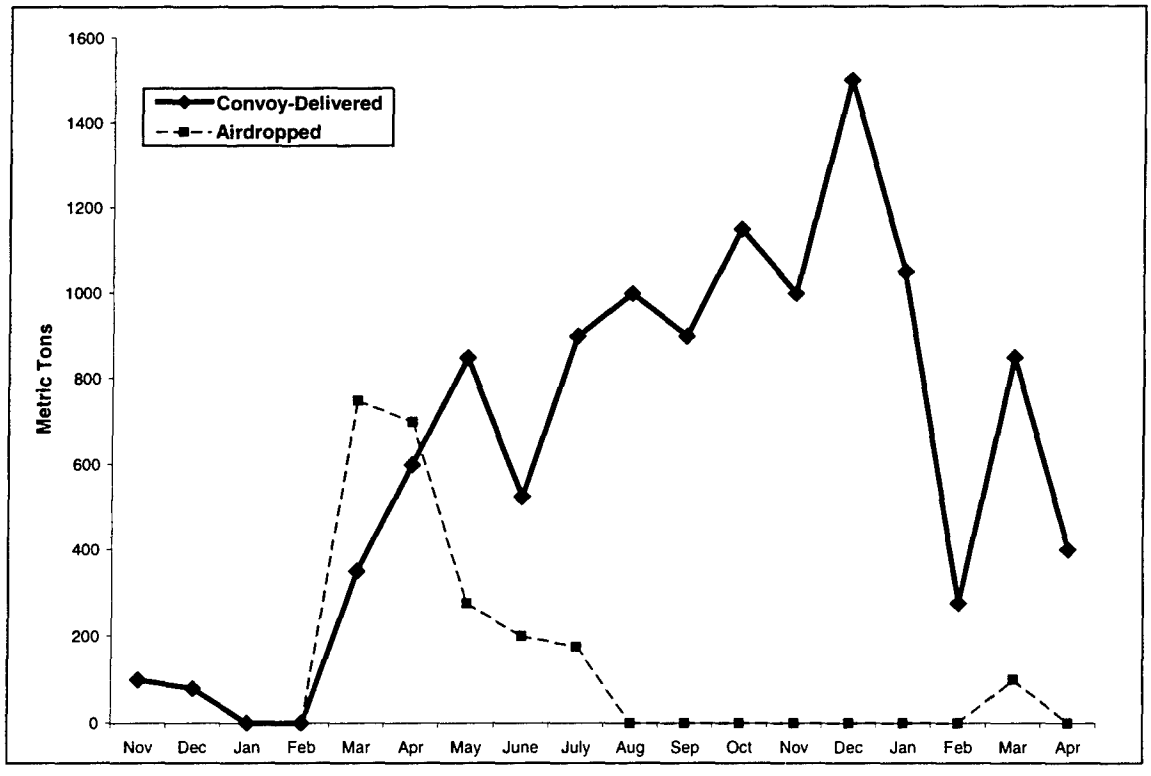

Figure III-4. Comparison of Convoy-Delivered Aid

Some experts on Bosnia suggest that the Bosnian Serbs were initially very concerned about the implications of U.S. air drops, a concern that might account for the spike in aid deliveries in March 1993. These analysts argue that, once the Bosnian Serbs grasped the air drop concept of operations (with its emphasis on medium altitude delivery, force protection, and inspections of cargo in Geneva), air drops no longer worried Serb commanders, and pressure on convoys returned to normal levels.[8] Other experts believe that the air drop operations lessened pressure on the convoys.[9] Available data support the view that air drops may have increased convoy access to specific isolated enclaves for specific time periods, but had limited effect on altering the overall Bosnian-Serb strategy of isolating and besieging Muslim enclaves.

Examining the effects of air drops on convoy deliveries to individual communities, as above, raises the higher order question of whether the air drop operations in general served as a substitute for more vigorous efforts to open ground routes to besieged populations in Bosnia. It is not possible to say with certainty that, absent air drops, civilian deaths would have been higher in Bosnia and outside powers would have intervened more vigorously to open ground corridors. OPP air drops over eighteen months were of long duration, however, for a humanitarian operation, especially when no weather or infrastructure barriers prevented overland delivery. Since civilian relief agencies had neither a plan for nor the capability of fully opening ground routes in the face of determined opposition without military assistance, such circumstances naturally stimulate speculation that air drop operations served as an expedient substitute for U.S. and allied military action. No evidence is available to suggest that the U.S. air drops were consciously conceived as a substitute for effective convoy operations, although many analysts interviewed for this study believe the air drops tempered calls for aggressive convoy delivery of relief supplies.

Although the psychological impact of air drops defies precise measurement, statements from those on the ground in the enclaves – Bosnians and relief workers – indicate the psychological impact was immediate, sustained, positive, and important. Existence within the enclaves was characterized by isolation, material shortages, conflict between original residents and displaced persons, and widespread depression, including

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8 Stuebner, William A., Advisor, Bosnian Reconciliation Project, United States Institute of Peace; former member OFDA Disaster Assistance Response Team in former Yugoslavia, interview, 29 July 1998

9 Interview with Karen Konig Abuzayd, Director of UNHCR Washington Office, 29 September 1998; John Menzies, Senior Fellow, U.S. Institute of Peace, Interview, 19 January 1999.

drug abuse and suicides. In this environment, air drops provided an assurance that the outside world was aware of the plight of enclave inhabitants, and willing to assist in some way. An experienced American relief worker from OFDA who visited Gorazde reported that virtually every interlocutor there noted the psychological value of the air drops. This relief worker reported that, some evenings, residents rushed from their homes at the sound of droning engines overhead only to realize that the C-130s were headed to another target. Even then, despite the twinge of disappointment, they were buoyed by the realization that compatriots in other enclaves would benefit from the flights, and by the reminder that they were not forgotten.[10]

B. ASSESSMENT OF THE DELIVERY PROCESS

By one measurement – the safety and protection of the U.S. air crews and their aircraft – the air drop delivery process was an unqualified success. During the course of the 18-month operation, crews reported instances of "radar illuminations and possible targeting by AAA fire."[11] Yet not a single casualty was incurred and not a single aircraft damaged by hostile action during this complex and risky operation.[12] JTFPP is fully justified in characterizing as "truly significant" the fact that "no loss of life or aircraft damage was suffered during the entire operation."[13]

In terms of getting supplies on the ground, the delivery process can also be characterized as successful, within the constraints established by the concept of operations. Given the plan to drop from medium altitude at night, creative navigational, communication, and rigging techniques were harnessed to the task (see "Technical Aspects of the Provide Promise Humanitarian Air Drops," above). Thousands of metric tons of vital relief supplies were delivered on or close to target, despite technical difficulties and formidable environmental barriers. Air dropped supplies contributed to a reduction in human suffering from hunger, disease, and cold, and boosted morale among civilian victims of war.

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10 Stuebner, op. cit.

11 JTFPP *Command Chronology*, p. II-D-5.

12 UNHCR's Air Operations Cell in Geneva (AOC) developed useful reporting formats to capture information relating to security incidents affecting airlift aircraft in Bosnia. Although these reporting formats were developed primarily for airbridge flights into Sarajevo, they may be useful for future air drop operations, as well. The two reporting formats – the Incident Report, and the Aircraft Shooting Report – are contained in the UNHCR document SPINS [Special INStructions]: UNHCR Joint Airlift Operations, 22 February 1995.

13 JTFPP Command Chronology, p. II-D-8.

The delivery process encountered difficulties, as noted below in the section on "Problems Encountered," including loss of cargoes and collateral damage. Almost exclusively, these problems grew from the concept of operations that made the safety of aircrews "the number one priority."[14] These trade-offs were understood at the time air drop operations were initiated. Media accounts of U.S. policy toward Bosnia from early 1993 include extensive coverage of the air drop plan and the relative inaccuracy of high-level drops.[15] Within the concept of operations developed for air drop operations – which took into account humanitarian, political, military and environmental factors in the region – DoD personnel developed an effective delivery process and executed well.

Air drop planners and operators displayed commendable flexibility during the delivery process, especially in managing the variable flow of relief supplies from the humanitarian pipeline. Donations from relief agencies were not always on time, or what was delivered was different from what had been requested and promised. According to the USEUCOM J-4, "In spite of every effort to provide what was asked for, we were often short specific commodities and had to substitute regularly. At one point we began to run out of MREs."[16] Aligning planned deliveries with available commodities demanded flexibility from all U.S. military staff, especially the riggers tasked with reconfiguring bundles on short notice.

One aspect of the Bosnia air delivery process deserves special focus: the weakness of assessment and monitoring capabilities on the ground. An analysis of the air delivery process suggests that the system linking military planners, humanitarian agencies, and recipients on the ground – especially monitoring and feedback linkages – could have been improved. In many cases, military planners and air crews simply did not have a clear picture of what was happening to the air dropped bundles once they left the aircraft, either prior to or after recovery. Aspects of this problem are highlighted in several of the "Problems Encountered" (below) and in several JULLS reports related to Bosnia.

Inadequate assessment and monitoring in the Bosnian enclaves meant that no one had a clear picture, across targets, of how many relief packets were actually getting into

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14 Ibid., p. II-D-1.

15 Michael R. Gordon, "U.S. Planes to Fly High to Keep Casualties Low," *The New York Times*, 24 February 1993; Elaine Sciolino, "Christopher Fails to Secure European Help for Air Drops," *The New York Times*, 27 February 1993.

16 MG William Farmen, USA (Ret.), former J-4, USEUCOM, Interview, 15 April 1999

the right hands on the ground. The division of labor in Bosnia assigned responsibility for generating air drop requirements and monitoring distribution within the enclaves to UNHCR, not to U.S. military forces. But the reality of conditions on the ground, including attacks on and shelling of the pockets, seriously constrained the ability of relief agencies to get trained assessment and monitoring staff on the ground or, once there, to ensure their mobility. The practical upshot of these limitations in Bosnia was a very imprecise targeting system and uncertainty about when emergency re-supply efforts were successfully completed. Since most of the Bosnian enclaves remained intact during the air drop phase of JTFPP, with governing structures and radio contact, at least minimal reporting on conditions was possible. Placing trained assessment and monitoring teams on the ground would be even more critical in other potential air drop environments, where conditions may be less stable.

This analysis suggests that humanitarian air drop processes, as in Bosnia, should be conceptualized and planned as a system, linking assessment personnel, delivery personnel, recovery and distribution personnel, and monitoring personnel. Although U.S. military forces may not directly perform each of these functions, or may not be present at all on the ground, DoD planners should take a systemic approach to air drop operations. Absent such an approach, in the worst cases, planners may see air drop processes as just delivery services. As expressed in one JTFPP report that took a less than systematic approach. "The bad weather and BSA [Bosnian Serb Army] targeting of some of the drop sites resulted in some recovery difficulties for the recipients. But the drop was successful."[17] Rating air drop processes as "successful" when it is unclear if recipients were able to reach supplies is the antithesis of systematic air drop planning.

C. NON-QUANTIFIABLE IMPACTS OF OPERATION PROVIDE PROMISE AIR DROPS

At the time U.S. policymakers first considered air drops in Bosnia, several objectives for U.S. policy in the Balkans were enunciated by Administration spokespersons. These included: increasing humanitarian aid by supplementing convoys; enhancing the U.S. role in the Vance-Owen peace negotiations; preventing the dismemberment of a sovereign nation-state; avoiding a broader Balkan conflict; stemming refugee flows into Europe; and setting the tone for the treatment of religious

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17 JULLS Report 93052-71787, *Summary JULL – Operation Provide Promise Functional Area: JTF-J3 Plans*, no date, p. 5.

and ethnic minorities in the post-Cold War period.[18] Analysts speculated about other U.S. objectives, possibly including: displaying a more activist U.S. engagement in Bosnia, without putting U.S. forces on the ground; developing a high-profile strategy to respond to public pressure against "ethnic cleansing" in Bosnia; enticing Bosnian Muslim participation in ongoing peace negotiations; and reducing Bosnian Serb control over the flow of humanitarian aid in Bosnia. Initial objectives notwithstanding, the JTFPP air drops, the media coverage they engendered, and the reactions they provoked all shaped the course of the conflict in Bosnia.

An analysis of the air drops and the political/military context in which they took place suggests the following notable, if non-quantifiable, impacts:

- Air drops created a perception of U.S. leadership. Policy deliberations on Bosnia within the U.S. government reflected two opposing inclinations: one, a desire to show continued U.S. leadership in the post-Cold War world, and two, a desire to avoid a European problem becoming solely an American problem. In this context, the U.S. decision unilaterally to initiate air drops with U.S. aircraft, and the public announcement of this policy, were seen, domestically and internationally, as signals of an increased American role in the region.[19]
- JTFPP air drops focused additional U.S. public attention on the humanitarian crisis in Bosnia, at least during the initial stages of the operation. The direct engagement of U.S. military personnel in highly visible relief operations, and the attendant media coverage, made more Americans aware of the emergency and raised its profile.
- The air drops continued a slow process of U.S. government tilting toward the Muslim perspective in the Bosnian conflict. Although the stated intent of the air drops was the impartial delivery of aid to any civilians in need, the target enclaves were overwhelmingly Muslim, dramatizing the perception that

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18 Warren Christopher, op. cit.

19 Using air drops in this fashion is consistent with U.S. Air Force doctrine on non-lethal applications of air power. Such doctrine states: "A critical mission of airlift forces is to provide the means for executing US national policy in military operations where the primary goal is not application of combat force... Some examples of this are aid to the Kurdish refugees in Iraq in 1991, [and the] Bosnian relief effort started in 1992... As the world situation becomes more competitive among regional powers, airlift will continue to play an increasing role in maintaining stability and exerting US influence. The presence of US airlift aircraft sends a clear message that a certain area or region is important to American interests and demonstrates the will and ability to act upon those interests... The statement that these operations make about US capability and purposefulness is equally clear to both friends as well as potential enemies." Secretary of the Air Force, *Air Force Doctrine Document 30: Airlift Operations*, 1 October 1995, p. 6.

Bosnian Serbs were primarily the aggressors and Bosnian Muslim the victims in the struggle.

- The air drops served as a dramatic symbol of U.S. military capability. Mounting a large-scale, technically impressive relief operation from Germany to a dozen enclaves across Bosnia, with significant force protection systems in reserve, provided a demonstration of U.S. military potential that went into the calculations of all parties to the Bosnian conflict.
- JTFPP air drops had a very large impact on morale within Bosnia, beyond the impact within the enclaves themselves. The former U.S. ambassador to Bosnia described the morale impact as "enormous", saying the U.S. flights brought the "thrill of hope" to the Bosnian Muslims and the "thrill of terror" to the Bosnian Serbs.
- Whether intended or not, the air drops contributed to the defense of the militarized Bosnian enclaves, and hence to the survival of the Bosnian government, at a time when its fortunes were at an ebb. According to eyewitnesses foreign and domestic, air dropped food sustained Bosnian government fighters within the enclaves. It is also possible that the air drops made Bosnian Serb attackers more tentative about all-out assaults on the enclaves, U.S. flights having established a psychological "trip wire" which besiegers had to consider.[20]
- Events in the two enclaves receiving the earliest air drops – Cerska and Konjevici – deserve careful analysis by air drop planners, since both towns fell to attackers within days after air drops began, in the order in which they received humanitarian air drops. Both communities were under heavy assault before the air drops began, and may have succumbed regardless of humanitarian operations. However, it is possible that the commencement of air drops focused Bosnian Serb attention on the enclaves and hastened their fall. The prospect of air dropped supplies stiffening resistance among the Muslim defenders may have propelled the Serb assault forces to accelerate their advance. Also, defenders of the enclaves were reported to have abandoned their positions, out of desperation, to gather air dropped supplies. A direct causal relationship between air drops and the fall of Cerska or Konjevici cannot be shown. However, the close association between the beginning of air drops and the overrunning of both towns serves as a reminder that humanitarian operations conducted during armed conflict can precipitate or accelerate military operations.
- Viable coordination mechanisms were developed to link the UN's leadership of humanitarian operations with military command and control systems.

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20 The "trip wire" analysis was provided by former U.S. Ambassador to Bosnia John Menzies.

Management of a technically demanding, potentially risky air drop operation conducted by national forces required structured military management systems. Consequently, COMJTFPP exercised direct command and control over all air drop units and exercised a great deal of discretion over the destination and scheduling of operations. At the same time, UNHCR compiled a priority list of target enclaves based on humanitarian need, and was the overall supported organization. Coordination mechanisms were established to maintain solidarity between the UN and U.S. forces, and to avoid an impression of unilateral U.S. action in Bosnia.

- Despite the general perception that initiation of the air drops equated with increased U.S. engagement in the Balkans, there may have been opportunity costs to the decision by the national command authority to select the air drop option. The Provide Promise air drops, like virtually all humanitarian air drop operations, were perceived by many observers as a relatively non-confrontational response to a humanitarian crisis. At the time the air drops began, the UN and European leaders were advocating a stronger U.S. role – diplomatic and military – to open ground convoy routes to civilian populations. The inconsistent success rate of overland convoys notwithstanding, truck convoys – through their confrontations at roadblocks and armed UNPROFOR escorts – provided a daily challenge to the Bosnian Serbs and to their authority to besiege civilian populations, in violation of the principles of international humanitarian law. Aggressive convoy operations, at least symbolically, re-asserted these principles of international law. To the extent that air drop operations substituted for more forceful actions to open ground access to the enclaves and permit the free movement of civilian populations, the policy decision to fly over, rather than directly confront, besieging forces entailed high opportunity costs.

D. PROBLEMS ENCOUNTERED

Operating in the midst of a brutal civil war, and constrained by numerous political, military and logistics guidelines, JTFPP and its civilian humanitarian partners faced not-unexpected problems in Bosnia. Problems specific to the air drops included:

1. Inadequate Determination of Need

Siege conditions, threats of violence to relief workers, shelling, chaotic conditions, varying competence among local officials, and other factors led to uncertain estimates of the nutritional or medical status of civilian populations. In certain pockets for limited periods, relief personnel were on the ground and able to assess, at least roughly, available food supply, nutritional levels, and distribution systems, and to

incorporate this information into air drop planning. In other isolated enclaves, no outsiders visited for months at a time, and relief workers relied on amateur radio reports or similar anecdotal evidence to estimate food, medicine, or winterization needs. Moreover, since convoys were being dispatched constantly – despite uncertain access – to virtually all enclaves during the 1993-94 air drop period, estimates of food and medical reserves were dependent on whether the convoys reached their goal or were turned back by opposing military forces. Estimates, therefore, were never certain for more than a short period of time. Inadequate determination of need resulted in less than optimal planning and aircraft utilization.

2. Key Staff Missing at JTFPP

JTFPP JULLS reports identified two types of technical expertise essential to planning and executing air drop operations that were not available to CJTF at the outset of this operation. The first gap was in staff with C-130 air drop experience. The JTFPP J-3 noted that "there was not a European Command C-130 operator brought in, until the air drop missions were up and running," although USTRANSCOM liaison officers offered some assistance.[21] JTFPP also noted the absence of a staff meteorologist. Recognizing that "the environmental data flow to the JTF is of significant importance," the J-3 reported that "there was no meteorologist to interpret the environmental data flow to the JTF."[22]

3. Initial Coordination Issues Between the U.S. Military and Civilian Agencies

As noted above, command and control relationships between JTFPP and UN authorities as to the generation and direction of air drop missions were initially uncertain. The development of a number of liaison sites was required to improve coordination. JTFPP identified, in JULLS reports, two specific steps to improve coordination: a UNHCR liaison officer should have been identified and assigned immediately to the JTF when planning orders were received,[23] and USEUCOM should have received timely

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21 JULLS Number 31350-02509, *Not Enough C-130 Air Drop Experience on the JTF Staff*, 23 September 1993.

22 JULLS Number 31362-67756, *Environmental Data Flow to the JTF*, 23 September 1993.

23 JULLS Number 32171-10917, *UNHCR LNO Should Be Requested*, 23 September 1993.

distribution of UN Security Council reports and other key UN documents, in order to enhance the planning process.[24]

4. Air Drop Accuracy

Joint Task Force Provide Promise reported "85% success hitting drop zone[s]" during the Bosnia air drop operations.[25] No similar official estimate is available from UNHCR, although a number of UN staff familiar with the air drop operations expressed doubt that accuracy of 85 percent was attained. It seems clear that accuracy varied significantly among air drop missions, with factors like weather and size of the enclave as important independent variables. It is likely that accuracy improved during the operation, as aircrews perfected guidance techniques and gained experience. It is also certain that significant amounts of materiel did not reach the intended beneficiaries. For example, the UN Department of Peacekeeping Operations (DPKO) noted on 2 September 1993: "It is reported that air drops of 31 August and 1 September were not on target and UNMOs [United Nations Military Observers] could not find evidence of the drop in eastern Mostar."[26] Unconfirmed estimates of losses in Maglaj ranged up to 50 percent of air dropped supplies.[27] A JTFPP J-3 JULLS report noted the lack of "detailed feedback concerning the accuracy of air drops to remote locations," and recommended "a methodology for marking air drop bundles."[28]

5. Certain Categories of Need Were Not Met with Air Drops

Throughout the 1993-94 period, relief agencies reported that diesel fuel was critical to the survival of isolated populations. The Centers for Disease Control and Prevention (CDC) reported on 15 October 1993 that "Diesel is not only the most important general need, it is the most important public health need. Without diesel, electrical plants, water systems, hospitals, and general transport necessary for

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24 JULLS Number 60337-72019, *Liaison with UN*, 7 June 1994.

25 JTF Provide Promise, *Grey Beards Conference* 94-3, 12 September 1994.

26 Excerpt from DPKO *Daily Situation Report*, 2 September 1993.

27 The Office of U.S. Foreign Disaster Assistance, citing radio reports in its *Situation Report* of 22 March 1994, reported a 50 percent recovery rate in Maglaj. OFDA DART member William Stuebner, in an interview on 29 July 1998, estimated 40 percent losses in Maglaj, based on information from multiple sources. UNHCR monitor Steve Corliss, in a 22 September 1998 interview, recalled his observation of several air drops while in Maglaj. He reported that numbers of the parachutes "drifted across the river to the Serb positions."

28 JULLS Number 31354-74918, *Confirming Drop Locations of CDS Bundles*, 23 September 1993.

maintaining the public health infrastructure cannot function."[29] A broadcast appeal by government officials in Gorazde claimed that "the medical situation is worse than the food situation," and requested among other critical items diesel fuel to operate ambulances and hospital generators.[30] Moreover, recognizing diesel fuel's potential military value, Bosnian Serb forces surrounding besieged pockets frequently refused entry to diesel tankers. These conditions notwithstanding, air drop operations did not include the provision of diesel fuel.

6. Collateral Damage and Casualties

Numerous eyewitness accounts documented by UNHCR and other relief agencies report damage to structures and casualties, including a number of fatalities, from air drops into the enclaves. There is no generally accepted estimate of the number of casualties or fatalities associated with air drops in Bosnia. Anecdotal evidence suggests an inverse relationship between casualties and the degree to which local or international officials organized the drop zone. Most eyewitness accounts of fatalities recount individuals hit by pallets as desperate civilians rushed to drop zones to scramble for relief supplies during unorganized recovery efforts.

7. Problems with Distribution

Distribution systems in place within the enclaves varied enormously. In Srebrenica, for example, UNHCR, ICRC, Medecins Sans Frontieres (MSF) and UNPROFOR all had staff on the ground by April 1993. Some air drops into Srebrenica after April were well-organized, with landing zones marked off and controlled by authorities, and supplies delivered to warehouses for orderly distribution. Depending on the level of desperation and the competence of local officials, reasonably orderly distribution – including to isolated senior citizens, the ill, and institutions like hospitals or orphanages – occurred.

On the other hand, immediately prior to the arrival of international staff, UNHCR provided this account of distribution in Srebrenica, representative of what occurred in other enclaves: "There was also a lot of fighting over the food and the distribution seems to have taken place according to the law of the jungle. Only the strongest and those with weapons got food; the rest went without. One 12-year old boy was killed because he

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29 OFDA, *Situation Report No. 14: Former Yugoslavia – Civil Strife*, 16 November 1993, p. 2.

30 UNHCR, *Reports on Gorazde*, internal report, 26 April 1993.

took a parcel... . It is also reported that some men stored the pallets and sold the food."[31] In Cerska and Gorazde, reports indicate that distribution was chaotic at times, and that soldiers left their frontline positions during air drops in order to retrieve food for their families.[32]

There is a broad consensus among relief workers in Bosnia that flutter drops of MREs helped ensure broader distribution of food supplies. They were not a panacea, however. Organized collection and distribution of bulk commodities remained necessary to ensure that the least mobile populations (home-bound elderly, handicapped, the hospitalized, residents of institutions) received basic commodities, and to ensure that specialized materiel, including medical supplies, reached hospitals and doctors.[33]

In addition to the chaotic collection and distribution that sometimes characterized air drops, a second problem identified by relief workers was organized diversion of supplies to military forces or profiteers. In each of the enclaves, Bosnian government soldiers manned defensive positions. These forces were comprised of, or supplemented by, local militias and armed civilians who resided in the enclaves. In these circumstances, the lines between civilian relief and re-supply of military forces blurred. Clearly, much air dropped food went to military forces defending the enclaves. An additional, unquantifiable, amount was siphoned off by profiteers who hoarded the food or sold it at high prices.

8. Inappropriate Cargo Pushed into the Air Drop System

Two categories of inappropriate cargo found their way into the Bosnia air drops: inappropriate medicines and inappropriate luxury or comfort items. Based on the observations of relief workers, outdated medical supplies sometimes were included in air drop cargoes, perhaps resulting from efforts to dispose of surplus commodities. These unusable supplies took up valuable cargo space, took the valuable time of riggers to pack, and disheartened medical professionals coping with emergency shortages in enclave

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31 UNHCR, *Reports on Srebrenica and Neighboring Villages Which Were Taken by Bosnian Serb Forces*, internal document, 19 April 1993.

32 OFDA Former Yugoslavia Review Team, interview of General Ferid Buljubasic, Commander, Gorazde pocket, 1992-95, 6 May 1998.

33 At least one interviewee reported that medical supplies ending up in the hands of civilians and soldiers were misused. The military commander of Gorazde stated that tranquilizers intended for medical staff were used as intoxicants by the general populace, creating an addiction problem. See, ibid., Buljubasic interview.

medical facilities. The international relief agency Medecins Sans Frontieres – Belgium (MSF-B) funded an after-action report on drug donation practices in Bosnia. That study estimated that 17,000 tons of all donated medical supplies, or 50 to 60% of total drug donations, were useless or unusable. MSF-B defined "useless" medicines as those "irrelevant to the epidemiological context" or "unknown or not usually used by the local health professionals." "Unusable" drugs were those that were expired, were unidentifiable (either delivered unsorted or labeled in unknown foreign languages), or damaged during transport.[34]

Inappropriate luxury and comfort items included toys, coffee, cigarettes and similar items. Although only small quantities of such items were included in air drops, and although such supplies undoubtedly did comfort the small percentage of civilians who received them, they also caused disruptions in the overall humanitarian effort. At least one relief worker noted that well-intentioned holiday "toy drops" damaged morale in the enclaves, as collection teams risked their lives to retrieve items inappropriate to the desperate conditions in the besieged pockets.[35] Another relief worker, in Gorazde, reported that the discovery of a small amount of coffee, cigarettes and sweets in an air drop bundle set off "virtually insane" stalking of the drop zones. Shortly after the arrival of the luxury items, recovery crews found "a pallet with medicines which had been literally shredded to pieces in a frenzied search for cigarettes by persons who had gotten to the landing spot only minutes before we did."[36]

Useful guidelines for humanitarian donations from charitable organizations, NGOs, and individuals were developed by UNHCR to lessen the amount of inappropriate material entering the delivery system. These guidelines, which included special instructions for air dropped supplies, covered shipping, handling, packaging, consignees, durability of containers, and related matters.[37] Also, JTFPP recommended in a JULLS submission that UNHCR authorities be designated to inspect, accept or reject donated medical supplies.[38]

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34 See Patrick Berckmans, et al, *Drug Donation Practices in Bosnia I Herzegovina* [sic], Agence Europeenne pur le Developpement et la Sante, 1996-97, pp. 14, 20.

35 Stuebner Interview.

36 Leendert Vissert, UNHCR, Memorandum, 14 October 1998, p. 1.

37 UNHCR, *Humanitarian Assistance in Former Yugoslavia: Guidelines for Donations In Kind from NGO's and Other Donors*, revised September 1993.

38 JULLS Number 31362-21734, *Lack of Ready Process and Functioning Reception Point for Donations*, 23 September 1993.

9. Shortages in Air Drop Equipment

By early 1994 shortages of parachutes and other equipment essential to the air drop mission drove up the costs and led to limitations in operations as JTFPP staff located new supply sources. The exhaustion of existing supplies of surplus G-12 parachutes – the preferred parachute for the humanitarian air drops – was a major concern to JTFPP planners. The practical difficulties in attempting retrieval of parachutes and other rigging material under conditions prevailing in Bosnia compounded the availability problem. [39]

10. Unclear End-State

The precise conditions under which air drop operations would be ended – the criteria for mission accomplishment – were not spelled out in Operation Provide Promise. Speaking of the JTF mission as a whole, JTFPP staff stated: "The most significant challenge JTFPP faced, and which colored the entire operation, was the lack of a defined end state, political or military.... The absence of this tenet distorted normal staff planning relationships. This impacted US Force planning, sustainment, intelligence architecture, C2 relationships, mission scope, ROE determination and training. It permeated everything JTFPP did."[40]

Disparate views of the appropriate end-state for air drop operations were apparent by the winter of 1994-95 in differing views of needs in the Bihac pocket. JTFPP's Command Chronology reports of Bihac: "The UNHCR made several requests for missions but as with Bihac, the humanitarian situation was not grave enough to warrant the high risk to aircraft and crew. In addition, the enclaves did not suffer the same humanitarian crises of the past." At that time, UNHCR was reporting in public documents that the situation in Bihac was "desperate," with families surviving on scraps of food, adding that the agency had "a standing request for air drops, but this is unfortunately still not possible."[41]

In humanitarian assistance operations like OPP air drops, as in military operations other than war in general, the delineation of military end-states will often be difficult. When military operations like the Bosnia air drops are initiated in support of civilian

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39 MG William Farmen, USA (Ret.), former J-4, USEUCOM interview, 15 April 1999.

40 JTFPP Command Chronology, p. I-2.

41 UNHCR, *Information Notes on former Yugoslavia*, February 1995.

agencies and larger political objectives, the ultimate objective may well be beyond the capacity of the force commander. In Bosnia, the objective of the air drop operations was to meet the emergency needs of civilians. Yet, everyone associated with the operation realized that civilian needs could only be fully met when overland routes were open and normal commerce restored – an objective tied to the end of military conflict in Bosnia. Military air drops were one variable in an equation that included civilian convoy deliveries, local civilian capacity, and ongoing peace negotiations, a reality that made operational cost-benefit calculations and military planning in general extraordinarily complex. In such environments, every effort must be made to clarify the objectives or end-state of the military's humanitarian component of the overall operation with U.S. government and international partners.

CHAPTER IV

OTHER RECENT AIR DROP OPERATIONAL EXPERIENCE

IV. OTHER RECENT AIR DROP OPERATIONAL EXPERIENCE

International organizations and/or U.S. military forces have conducted several major humanitarian air drop operations in recent years. In certain aspects, these operations shared characteristics with Operation Provide Promise, and reinforce the lessons of Bosnia. In other respects, these missions differed significantly from OPP, highlighting additional considerations DoD planners must take into account.

This chapter briefly examines three selected humanitarian operations, each of which made use of air drops: the Somalia flood relief effort in 1997-98; Operation Provide Comfort, the U.S. re-supply of Iraqi Kurdish refugees in 1991; and the World Food Programme air drops in Sudan, beginning in 1992 and continuing today. Somalia provides an example of a humanitarian mission following a natural disaster, with very limited conflictive elements. Operation Provide Comfort is a case when air drops were used as a transitional tactic within a larger humanitarian strategy. Sudan illustrates a UN-managed operation in a conflict zone with characteristics different from Bosnia. Of these three examples, only Operation Provide Comfort was a military operation. Air drops were arguably justified in all three instances, although for different reasons in each case.

A. SOMALIA AIR DROPS TO FLOOD VICTIMS, 1997-98

1. The Target Population

In mid-October 1997, torrential rains fell in southern Somalia, causing widespread flooding over thousands of square miles in the Juba and Shabelle river valleys. By the time the flood waters receded in early 1998, more than 2,400 people had died from drowning or disease, and an estimated one million Somalis had been displaced from their homes. The region affected by the crisis is shown in Figure IV-1.

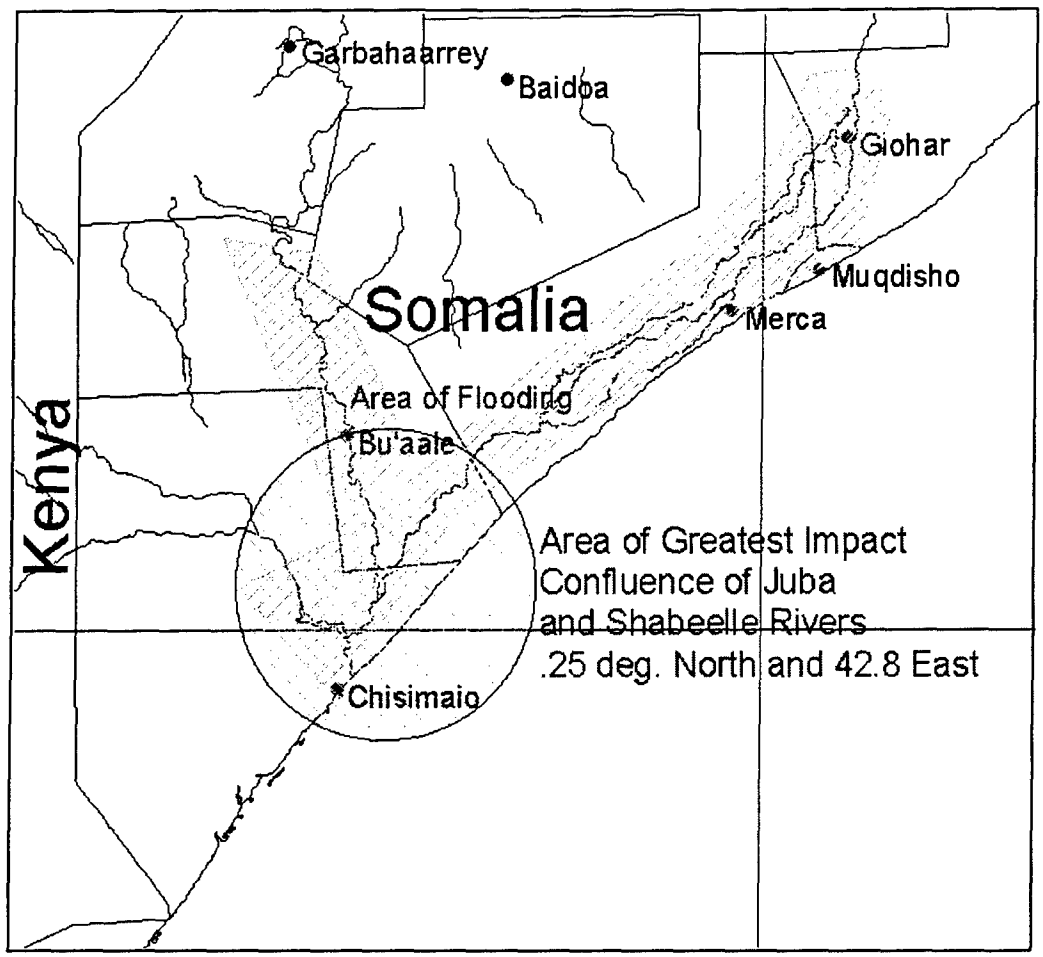

Figure IV-1. Flooding in Southern Somalia, 1997

A major aspect of the crisis, which shaped the design of the international humanitarian response, was the rapid rise of the floodwaters. The ICRC estimates that two-thirds of the expected Autumn rains fell in less than 24 hours within parts of the affected area. Rainfalls between five and 25 times the average precipitation occurred in late October, perhaps caused by El Nino effects.[1] On a single night in early November, floodwaters rose over two meters in the town of Bardera.

The rapid flooding drove many fleeing residents to dikes or small islands of high ground, where they were trapped in the open, surrounded by floodwaters. Civilians fleeing the floodwaters had little opportunity to gather food supplies or other essentials.

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1 ICRC, *Update No 1 on ICRC activities to assist the flood victims in Somalia and Ethiopia*, 13 November 1997, p. 1.

The most severely affected victims were completely without food or shelter, in the open, and punished by driving rains.[2]

The nature of the crisis – especially the ongoing severe weather, and the dispersion of small groups of survivors across a large area – limited the initial assessment of the crisis by civilian relief agencies, prevented systematic monitoring of the population's condition, and prevented insertion of outside staff to assist with relief distribution. Initial assessment was accomplished by daily aerial surveys of flooded areas.

Although relief agencies recognized that the provision of safe drinking water was the highest single priority for storm victims, interventions to provide potable water were limited under the circumstances. As flood waters receded, agencies focused on draining, pumping and cleaning of wells, in addition to chlorination, to restore safe drinking water as soon as possible. During the period when civilians were trapped on bits of high ground, relief efforts focused on delivery of food, medicine, and shelter materials. Appropriately, recognizing that limited fuel was available and cooking fires would be difficult to maintain as rains continued, relief agencies provided ready-to-eat rations, such as high energy biscuits.[3]

2. Humanitarian Strategy

Information about the scale of the catastrophe, and about the general condition of its victims, was shared among relief agencies and coordination mechanisms were rapidly established. An *ad hoc* coalition of humanitarian agencies – the Somalia Inter-Agency Flood Response Operation – was established in Nairobi, Kenya, under the overall management of the Office of the UN Humanitarian Coordinator for Somalia. The coalition included UN agencies, other international organizations, and NGOs assisting in Somalia.[4]

The strategy selected by these agencies was delivery of relief supplies, consisting of food and shelter materials, to the victims in-place, until receding flood waters would permit them to return to their homes. Some communities displaced by the flooding could be reached by truck convoy or by aircraft landing at air strips that were still usable.

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2 ICRC, *Somalia: Floodwaters still rising*, 14 November 1997, p. 1.

3 ICRC, *Update No 1*, p. 1.

4 UN Office for the Coordination of Humanitarian Affairs, *Flood Update to 7 April 1998*, ReliefWeb, 14 April 1998.

However, the large area affected, the damage to existing road and bridge infrastructure, the requirement for a rapid response to prevent deaths from exposure and starvation, and the location of thousands of victims on isolated spits of land all argued for the use of air drops in southern Somalia as a component of the relief strategy. Air drops were employed as a significant component of the overall effort.

Between mid-November and 15 February, the WFP provided approximately 6,100 metric tons of relief aid targeted at more than 500,000 individuals, an estimated one-third of which was air dropped.[5] Most of the assistance was food aid, but the air drops also included medical supplies, blankets, and shelter material.

3. Alternatives Considered

The ICRC and other relief organizations considered the alternative of relocating isolated groups of flood victims in the open to relatively sheltered areas. However, the scale of the catastrophe and wide dispersion of the affected population made large-scale evacuation infeasible. Evacuation would have required massive logistics support; the limited capacity available locally put such alternatives "well above the means of humanitarian agencies."[6]

Alternative delivery systems were employed along with air drop to deliver relief assistance. These mechanisms included boat, overland, and air strip operations, when feasible. However, flooding prevented overland and air strip deliveries to many areas, and such operations were to remain limited for weeks or months until flooded land dried. At one point in the crisis, WFP had leased a fleet of 18 relief delivery boats to supplement air and truck delivery systems.

4. Air Resources Employed

The largest part of the air drop operation was conducted by the World Food Programme (WFP), operating from logistics bases in Kenya. WFP ran air drop and air bridge operations, utilizing fixed-wing and helicopter assets.[7] The extent of rainfall in

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5 Somalia Aid Coordination Body, *Floods Update to 18 February 1998*, 18 February 1998. Precise data on the amount of air dropped supplies is unavailable from WFP. The one-third estimate is based on extrapolation from weekly delivery data reported at the time.

6 ICRC, *Update No 1*, p.1.

7 WFP's fleet for this operation included one Twin Otter, two Buffaloes, two Helicopters (M1-8), one Caravan, and one C-130. (WFP, *Somalia Emergency Report No 1*, 2 January 1998).

October and November meant that flood waters did not fully recede until April 1998, and WFP air drops to isolated communities continued until March of that year. As waters receded, relief operations shifted increasingly to road delivery, and local agents – including Somali NGOs and village elders – were more systematically incorporated into the relief distribution process.

5. Political-Military Environment

The political-military environment in Somalia affected the relief operation in several ways. First, the absence of a functioning government in Somalia meant that civilian flood victims were forced to rely on what they could provide themselves, plus international aid. Indigenous governmental institutions for emergency response were non-existent. Second, absent a functioning government, international relief agencies were already in place in southern Somalia, familiar with the operating environment and topography, and free to organize a relief effort without significant consultation with national authorities. Prior and ongoing relief operations conducted by international organizations within the region (including Sudan and Kenya) meant that logistics facilities and systems were available nearby, and supply pipelines at least partially full. Third, although Somalia in general was driven by factional conflict during this period, no significant military threats constrained air operations in the Juba and Shabelle valleys. WFP was able to plan and execute air drop operations without fear of attacks on aircraft or crews. On the other hand, relief food being delivered overland and by airstrip operations were subject to theft from bandits and paramilitary forces.

6. Conclusion

Overall, the southern Somalia relief effort was an appropriate use of air drop operations in a rapid-onset disaster environment. The isolated, dispersed, and desperate condition of the local population, limited viable alternatives, a requirement for speed, destruction of infrastructure, availability of humanitarian air assets in the region, and absence of political or military constraints impelled air drop operations to save lives that would otherwise have been lost in the short-term. Appropriately, emergency air drops were replaced by overland delivery and more systematic distribution mechanisms as receding flood waters permitted.

Air drops were not a panacea in southern Somalia in 1997-98. Air drops were not able to meet desperate needs for potable water, fuel for heating, and insect control mechanisms. Moreover, normal standards of targeting of relief supplies to the most

needy, and normal systems for equitable distribution of air dropped supplies, were both sacrificed to the need to reach widely dispersed population quickly in order to save lives. On balance, air drops were a useful element of an overall relief operation in this natural disaster.

B. OPERATION PROVIDE COMFORT, NORTHERN IRAQ AND TURKEY, 1991

In Spring 1991, on the heels of Operation Desert Storm, more than one million Kurdish inhabitants of northern Iraq fled toward Iran and Turkey following a failed rebellion against the regime of Saddam Hussein. About 450,000 of those who fled toward Turkey found themselves living on cold, icy mountain slopes along the Turkey-Iraq border in early April. Over the next several weeks, U.S. Air Force and allied aircraft dropped food, blankets, and shelter material to these displaced individuals, in an operation designated Operation Provide Comfort.

1. The Target Population

Most displaced persons fled their villages with few supplies, or had to abandon vehicles and supplies as they approached the mountains in the border area. They required potable water, food, and medical supplies, along with shelter material and blankets. Early reports from the scene stated that an estimated 1,000 Kurds were dying each day from exposure or disease.[8] The Kurds were prevented by Turkish authorities from crossing the border into Turkey. With Iraqi forces in the vicinity and threatening to attack the displaced encampments, the Kurds were trapped in an isolated region. Their numerous mountain encampments were accessible in part by secondary roads or pack animals; in some cases they were totally inaccessible by overland routes from Turkey. Among the encamped Kurds were a number of armed Peshmerga fighters who had fled with the general population.

2. Humanitarian Strategy

According to humanitarian workers on the scene at that period, the immediate goals of civilian relief organizations were two: to prevent as many deaths as possible while the Kurds were trapped in the mountain camps, and to move the displaced

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8 Daniel L. Haulman, *The United States Air Force and Humanitarian Airlift Operations, 1947-1994*, Air Force History and Museums Program, 1998, p. 369.

populations as quickly as possible to fewer, more accessible and more sheltered locations.[9] Considering the desperate conditions in the camps, the severe weather, and the limited road access to the displaced Kurds, air drops were incorporated into the humanitarian response, along with overland delivery to those sites that were accessible with this mode of delivery. Within weeks after humanitarian assistance began, U.S. military forces, U.S. government organizations, UN agencies, and NGOs had established dozens of tent camps, and related relief services nearby within Iraq, to encourage the displaced communities to leave the mountainsides.

Although the air drop operations delivered a substantial quantity of important supplies, reducing suffering within the target population, several serious problems were noted immediately. First, recovery operations were chaotic; neither NGOs nor Kurdish leaders nor Turkish troops were able to organize drop zone security and systematic distribution of supplies until U.S. Special Forces joined the effort. Initial recovery was characterized by riots, conflict, and a significant number of casualties, both from air drop pallets themselves and from landmine injuries caused when Kurds rushed through unfamiliar terrain to retrieve supplies. Second, the food supplies initially dropped – MREs – brought difficulties as well as benefits to the Kurds. The MREs were appropriate emergency food items to the extent that they required no preparation, and were a high calorie ration appropriate to the severe weather conditions. However, although MREs were consumed by the desperate displaced persons, some were discarded when the predominantly Muslim Kurds learned that pork products were included. Those MREs that were consumed caused health problems, including diarrhea and dehydration, among a populace ingesting the unfamiliar food. Third, important immediate needs, especially for potable water and adequate sanitation facilities, could not be provided by air drops alone.[10]

3. Alternatives Considered

Entry into Turkey and the granting of refugee status to the Kurdish displaced population was a viable option, from the humanitarian perspective. However, ongoing instability in the border region and Turkey's ongoing Kurdish insurgency made this option politically infeasible. The alternative strategy of return to traditional Kurdish

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9 Fred Cuny, *An Assessment of Airdrops in Relief Operations*, unpublished manuscript, p. 6; Dayton Maxwell, former deputy director, Office of U.S. Foreign Disaster Assistance, interview, 16 February 1999.

10 Ibid., Cuny; Maxwell.

areas of northern Iraq – the alternative ultimately adopted – required a significant commitment of political will and military force by the international community to create an 8,000 square mile "security zone" in northern Iraq.

4. Air Resources Employed

More than 20 U.S. Air Force C-130s were employed in the air drop operations, along with C-141s and C-5s that ferried humanitarian supplies to logistics bases in eastern Turkey. Air bases in eastern Turkey provided an essential, close-by logistics base from which to reach the Kurdish population. Rigging also took place at these Turkish air bases, as most air dropped supplies were parachuted, rather than free dropped, into the drop zones. Helicopters were rapidly incorporated into the humanitarian relief operations, because drop zones were small, with limited accessibility. Helicopters, as they became available in the AOR, quickly became the relief delivery mode of choice. Eventually, U.S., German and British military helicopters (CH-46s, CH-47s, CH-53s, and CH-60s) were incorporated into the relief operations to deliver supplies to isolated mountain camps.

5. Political-Military Environment

The political-military environment shaped the air drop operation in several ways. The recent conflict between U.S. and allied forces and Saddam Hussein's regime was a major factor impelling continued U.S. interest in assisting the Kurds. A significant residual U.S. military presence in the region assisted in the air drop operations. However, Iraqi forces retained a potent capability to disrupt humanitarian operations along the Turkish border, or to massacre displaced Kurds. Population and force protection, therefore, were major issues for Operation Provide Comfort, both during the air drop phase and when opening the security zone for Kurdish return to northern Iraq.

Political issues also shaped the operations in that Turkish reticence about allowing a major influx of Kurdish refugees limited humanitarian options available to planners. On the other hand, Turkey's willingness to allow access and logistics bases for the humanitarian operation were central to its success in delivering supplies quickly to the target population. Ongoing tensions in the region among Turkey, Iraq, and the Kurds also impelled an intense search for a viable long-term solution to a humanitarian crisis involving 450,000 Kurds. Finally, the presence of Kurdish fighters in the camps raised important questions for U.S. military and civilian leaders about how much to incorporate these elements into relief planning and distribution.

6. Conclusion

Air Drop operations during Operation Provide Comfort provided a method to keep Kurdish civilians alive during the early phases of a crisis that developed very rapidly; air drops were able to buy time to organize a more durable plan of action. It was clear to relief workers almost immediately that existing conditions were not supportable in the mid-term, regardless of how successful air drop operations were. That is, the severity of the weather, shortages and public health conditions on the mountain slopes of eastern Turkey would cause large numbers of deaths absent an alternative strategy. That alternative strategy was developed and implemented rapidly. Air drops were important as a transition strategy to keep people alive in the interim.

C. SUDAN AIR DROPS, 1992 TO PRESENT

The World Food Programme describes its air drops in southern Sudan as the largest and longest-running air drop operation ever conducted. From 1992 until the publication of this study (1999), the World Food Programme (WFP) delivered 214,655 metric tons (MT) of food and non-food aid to Sudan by air, including 115,000 MT in 1998 alone. Approximately 75,000 MT were air dropped in 1998, 65 percent of the total.[11]

1. The Target Population

Since 1983, southern Sudan has been a battleground in sporadic fighting between the Government of Sudan (GOS) and the Sudanese People's Liberation Army (SPLA), a southern-based rebel movement. The fighting is driven by major ethnic, cultural and religious differences between Sudan's north and south. Over the past decade and a half, southern Sudan has witnessed a recurring cycle of open warfare, guerrilla operations, raiding by militias and splinter groups armed by both sides, besieged towns changing hands, large-scale displacement of civilian populations, destruction of agriculture and infrastructure, and widespread brutality and starvation. This man-made crisis has been exacerbated by cycles of flooding and drought in the harsh climate of Sudan.

Although the target population has varied widely in numbers and locations since 1983, the overall census of beneficiaries has remained high. In 1999, the WFP was targeting approximately 1.2 million displaced and war-affected civilians for relief food

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[11] Pierre Carasse, Senior Logistics Officer, WFP/Rome, Interview, 5 February 1999; World Food Programme, *Airlift Operations*, 2 July 1998, pp. 3-4.

assistance in southern Sudan. Vulnerable groups of the population are in diverse conditions, including:

- Camps for displaced persons
- Destitute displaced individuals who have lost livestock, crops, kin and other traditional supports
- Formerly displaced persons settling in new locations where they do not yet have sufficient sources of food
- Populations remaining in their communities, which have lost food supplies
- New groups of internally displaced persons resulting from fighting or natural calamities. [12]

Over the many years international relief organizations have worked in southern Sudan, they have developed professional assessment techniques to determine the extent and level of need for humanitarian assistance. War-affected communities are surveyed to determine the population needing assistance, and the resources available from other means (crops, fishing, wild foods, trade, labor, kin support, and other sources). Based on a daily energy requirement of 2,100 calories per person, the food shortfall is computed, which serves as the basis for computing relief deliveries. Based on such computations, WFP determined that approximately 173,000 metric tons of food would be required in southern Sudan in 1999.[13]

Separate factors affecting relief delivery in southern Sudan are the vast distances involved and the limited transportation infrastructure. As illustrated by Figure IV-2, southern Sudan is similar in size to the Southeastern United States. Across this large area, the road infrastructure is very limited and subject to closures during the rainy season. The populace is widely dispersed in small towns and rural areas, with some concentrations along the Nile, and includes large numbers of herders who migrate with changes in rainfall.

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12 WFP, *Project Document for WFP Sudan EMOP 5826.02*, 12 January 1999, p. 5.

13 Ibid., p. 2; p. 4.

World Food Programme

SOUTH SUDAN TRANSPORT CORRIDORS

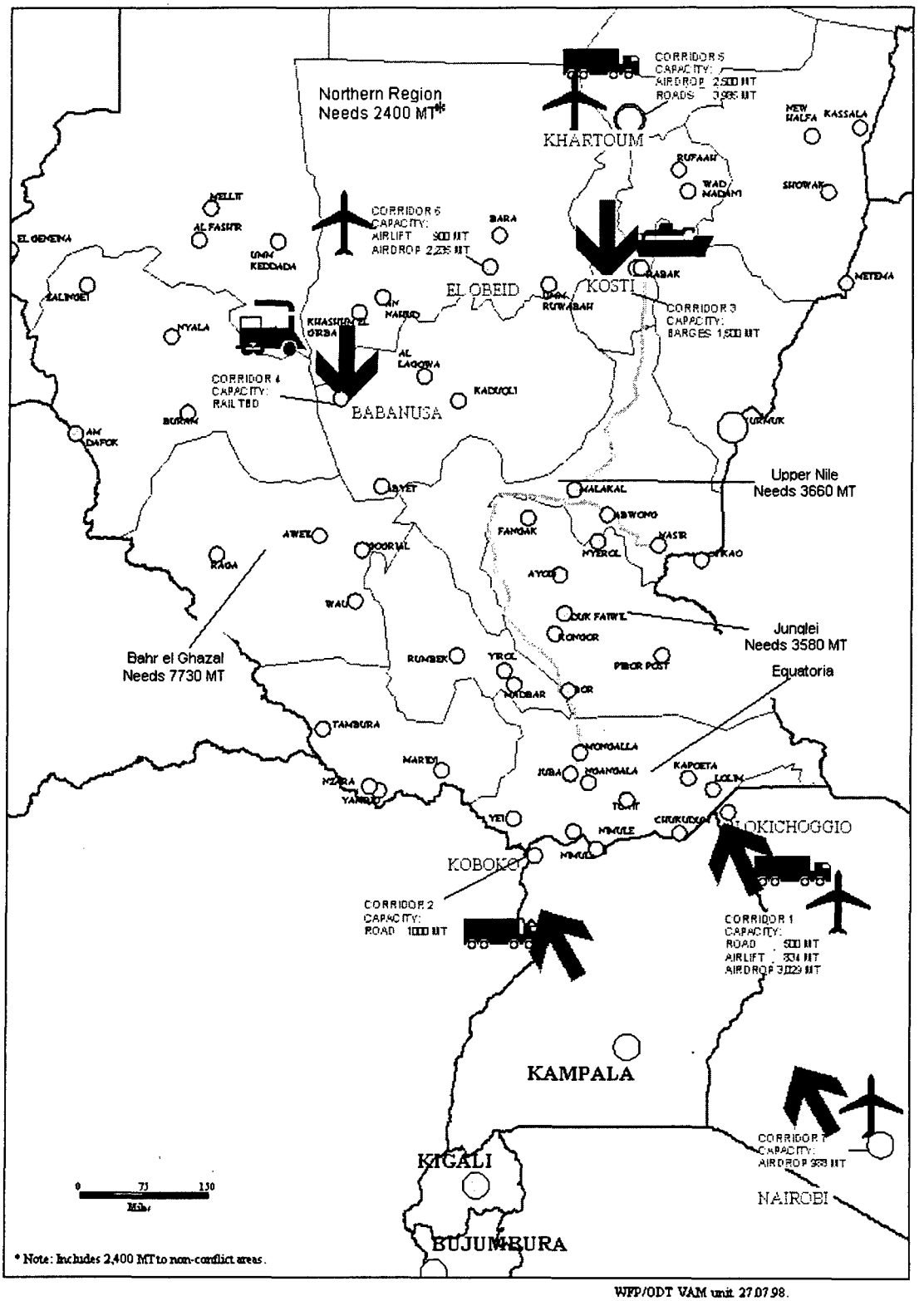

Figure IV-2. South Sudan Transport Corridors

2. Humanitarian Strategy

There are needy Sudanese in both the northern and southern parts of the country, in regions controlled by the government and in areas controlled by rebel forces. Since both sides have the capability of disrupting relief operations to civilians under the control of their opponents, international relief corridors and targets are carefully negotiated in order to maintain impartiality. Since 1989, a consortium of UN agencies, NGOs, international organizations and government and SPLA relief agencies – Operation Lifeline Sudan or "OLS" – has been the forum for allocating relief deliveries, guaranteeing access to needy civilians, and resolving disputes about humanitarian assistance. In late 1998, representatives of the factions signed a "Security Protocol and Minimum Operational Standards" document, which is intended to facilitate relief efforts. As in Bosnia, however, negotiating the concurrence of the warring parties offers these parties a *de facto* veto over humanitarian operations in southern Sudan, a veto that, in practical terms, overrides rights guaranteed to the local population under international humanitarian law.

A specific goal of WFP's assistance program is "to reduce internal population displacement due to lack of food." In this regard the Sudan food relief program differs significantly from the air drops to the Bosnian enclaves. In Sudan, shifting battle lines, raids, droughts, flooding, and resultant disruption of normal agriculture and commerce have frequently impelled population migrations during the decades of civil war. Communities and families have been forced to leave their homes in order to seek relief food distribution centers, better pasture for their herds, safety from attack, or for other reasons. These forced migrations often lead to clusters of displaced individuals in camps or on the outskirts of towns, living in desperate conditions, facing increased disease and social disintegration, absent any means to earn a livelihood. In these chaotic conditions, the WFP and other international relief organizations attempt to distribute assistance in order to reduce internal displacement as much as possible.

Air drops are an important component of the WFP aid strategy. Employing free drops from an altitude of about 700 feet, WFP has dropped relief supplies to dozens of sites across southern Sudan. The air drops to the region originate both in Kenya to the south and from northern Sudan, in government-controlled areas. According to WFP planners, air drops are a logical way to overcome the great distances in southern Sudan,

to deliver relief during the rainy season, to reach isolated groups of civilians, and to target isolated villages to discourage internal displacement.[14]

An important aspect of the WFP air drop operations is linking aircraft and crew with personnel on the ground. Mobile "reception teams" of two to four food monitors and field assistants prepare the drop sites, establish security, negotiate the distribution with local leaders, and open radio contact with the air drop aircraft before drops are initiated. More than 100 WFP staff, both international and Sudanese, are engaged in these ground operations, moving from drop zone to drop zone. These same teams assess the impact of the previous air drop (whether the agreed upon distribution was made, whether vulnerable groups within the population are being served, whether theft has occurred) when they return to a community to organize the following drop.[15]

3. Alternatives Considered

Air drops are one element of a multi-faceted relief delivery system into southern Sudan. Truck convoy, airstrip delivery, barge traffic, and even rail transport have all been utilized or considered in the overall humanitarian effort. In an attempt to reduce dependence on air delivery in southern Sudan, WFP is considering a number of investments in alternative delivery modalities. Among these investments are:

- Rehabilitation of several roads to all-weather status
- Establishment of a WFP-owned fleet of 40 all-terrain trucks
- Rehabilitation of barges and tugs for river transport
- Negotiations on increased rail transport.

The impetus for developing alternatives to air delivery in southern Sudan comes from the very high cost of air drops and airstrip operations, as well as the durability of the conflict. Unlike the Somalia case described above, there is no reasonable expectation among humanitarian agencies that the conflict in Sudan will end any time soon, and that relief food deliveries can be ended. Currently, it averages about $108 to move a ton of relief food from an overseas location to a Sudanese or Kenyan port. The rest of the trip to a distribution site in southern Sudan costs $584 per ton, due in large part to the reliance on air delivery.[16]

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14 Carasse, op. cit.

15 Ibid.

16 Op. cit., *Project Document*, pp. 8-9.

From the strategic perspective, civilian relief agencies have long recognized that air drops and other delivery options will continue to be required as long as widespread civil war continues in Sudan. Numerous initiatives and negotiations by the UN, private organizations, bilateral powers, regional organizations and the parties themselves have not yet brought an end to the conflict, or made peace a viable alternative.

4. Air Resources Employed

Air drop operations in southern Sudan are large-scale and have been employed for years. Therefore, WFP has developed substantial logistics facilities, including warehouses, at four origination points for air drops: Khartoum and El Obeid in northern Sudan, and Nairobi and Lokichoggio in Kenya. By late 1998, WFP was operating a fleet of 18 aircraft in support of its relief program in Sudan, flying from the two bases in Kenya and two in Sudan.[17] Sixteen of the aircraft are WFP owned or leased. The two C-160s were contributed to the operation by the German government in September 1998, becoming the first military-operated aircraft to join the current phase of the WFP humanitarian air drop.

5. Political/Military Environment

Both the Sudanese government's military forces and the SPLA have the capability of shooting down relief aircraft, at least as air drop operations are currently configured. In addition, both sides have the capability of disrupting distribution of humanitarian assistance on the ground, and/or threatening relief workers. A number of relief workers, international and Sudanese, have been killed since the current operations commenced. Consequently, the WFP and other international agencies are required to negotiate access for air drop and other delivery operations. Despite these negotiations, relief operations are subject to periodic disruption by shifting political-military objectives of the parties, as well as by rogue units.

The politics of humanitarian assistance in southern Sudan are complex. First, much of the relief food is provided by Western countries, like the United States, with unfriendly relations and limited diplomatic contacts with the government of Sudan. Second, ethnic ties across borders with Sudan's southern neighbors, and rebel activity in

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17 WFP, *WFP Air Fleet for Sudan Grows with Addition of German Military Aircraft*, Press Release, 22 September 1998. The fleet consisted of eight C-130s, four Ilyushin 76s, four Buffaloes DHC-5, and two C-160s.

several border areas, make the government wary of relief assistance originating from Kenya and Uganda. Third, the large amount of food aid entering southern Sudan over the past several decades, and almost certain diversion of some food to fighters, has helped maintain the viability of the rebellion in the south. Fourth, the conflict has been characterized by shifting allegiances among southern Sudanese factions, some of which have sided on and off with the government during the course of the conflict.

6. Conclusion

These and other political/military factors, along with the duration of the North-South conflict in Sudan, have created one of the world's most complex humanitarian assistance programs. From a humanitarian perspective, the large number of war-affected individuals, their isolation within the vastness of southern Sudan, the desire to deliver food directly to isolated locations to limit displacement, the weak transport infrastructure, and the periodic heavy rains all make air drops an important part of the relief equation.

Like Bosnia, southern Sudan air drops require international agencies to seek the concurrence of those causing civilian suffering in the first place. Also like Bosnia, air drops are an extraordinarily costly method of delivery, and relief agencies in Sudan are continuing to pursue alternative delivery modes. Unlike Bosnia, however, most war-affected communities in southern Sudan are mobile, and designing an air drop operation to prevent large concentrations of displaced persons at relief distribution centers is a conscious objective. Also unlike Bosnia, this civilian-run air drop operation appears to have invested heavily in systems to manage air dropped supplies on the ground, attempting to ensure reasonably equitable collection and distribution among recipients.

D. SIMILARITIES TO AND DIFFERENCES FROM BOSNIA AIR DROPS

In Bosnia, civilians requiring relief assistance faced severe problems. They were located in isolated enclaves with limited possibilities to leave the immediate area, subject to military attack, and threatened by severe winter weather. On the other hand, they possessed significant strengths and capabilities. Many of the civilians were living in or near their homes, which provided shelter; they produced, traded for, or otherwise obtained some of their basic needs themselves; they had access to at least limited medical facilities and personnel; and they received periodic overland deliveries of relief supplies.

The barriers to normal life for aid recipients in Bosnia were entirely political and military. Alternative systems for aid delivery were barred not by natural phenomena or logistics constraints but by combatants. Whether appropriate or not, the international

community operated under a policy of "consent" in Bosnia, organizing humanitarian programs that worked around the political-military status quo on the ground, while launching diplomatic initiatives to solve the overall Bosnian crisis. Since air drop operations were undertaken in the midst of a war zone, those delivering aid – whether on the ground or in the air – faced considerable risk from organized or rogue military units.

Under these circumstances and consistent with these facts, air drops in Bosnia had a specific purpose: to supplement road convoy and reach besieged civilian communities, in place, during periods of extreme shortages, while separate political-military initiatives attempted to solve the underlying reasons for their suffering. This strategy implied a medium-term to long-term air drop plan, since enclave communities – absent an attempt to break the blockades – would require assistance for months or years in order to ensure their survival until the Bosnian conflict was resolved. These factors also argued for the use of military assets to air drop the supplies, because of the high threat environment. Under the circumstances, extensive liaison with civilian relief agencies was essential, to ensure that air drops had a synergistic relationship with other relief efforts or, at a minimum, did not disrupt road convoy and other ongoing aid programs.

Relief recipients in Somalia, northern Iraq, and Sudan faced, or continue to face, severe problems, as well, but their conditions varied significantly from those found in Bosnia. In Somalia, many victims were bereft of basic food, clothing, shelter, or community facilities, and subject to severe weather. Absent immediate aid, many would have died within days. Additionally, they were scattered, often in small groups, over a large area without overland access. The duration of their difficulties depended not on political-military factors, but on a natural phenomenon: the receding of floodwaters. Air drop operations were intended to keep desperate people alive in the short-term, until a combination of alternative strategies – boat and overland delivery, relocation, and return to their own land – could be put in place. Absent a significant military threat against relief aircraft, civilian agency air assets in the region could be employed rapidly as part of a multi-modal relief effort. As alternative relief options gradually became available, high cost air operations were phased out.

The situation for Kurdish civilians in northern Iraq was similar, in some respects, to that in Somalia. High mortality rates could be expected in the short-term, due to severe weather or disease, and aid recipients were unable to move to a more hospitable locale. Early and accurate assessments by relief workers indicated that sustained supply of basic commodities in place was not, because of the severe mountain environment, a viable strategy. In northern Iraq, as in Bosnia, the impediments to civilians resuming

normal lives were political-military factors, rather than floodwaters. Unlike Bosnia, however, the international community was willing to take significant political-military steps to remove the blockade of civilian victims. The simultaneous provision of air dropped relief supplies, and planning for transit camps and a "security zone" in northern Iraq, defined Operation Provide Comfort air drops as a short-term strategy to keep families alive while alternative, more durable programs were put in place. Serious security concerns in northern Iraq argued for the use of military aircraft to deliver relief supplies. Significantly, unlike Bosnia, U.S. military forces were present on the ground during an air drop operation in order to ensure that relief supplies were retrieved in an orderly fashion and equitably distributed.

The humanitarian environment in southern Sudan resembled Bosnia in several aspects. The primary motivation for relief programs was to aid war victims, humanitarian operations have been conducted amidst the fighting, and the conflict has endured for years. The target population in southern Sudan also resembled that in Bosnia in that many recipients were in their home communities and had at least limited capacity to provide for some of their needs.[18] However, in southern Sudan populations were mobile and could be found in many circumstances (displaced camps, in their own communities, on the run, in neighboring towns). The design of WFP's air drop strategy attempted to take these factors into account by establishing a widely dispersed aid delivery system intended to keep recipients close to their home communities. In contrast to Bosnia, civilian relief agencies invested much more heavily in managing the receipt and distribution of air-delivered relief supplies, assembling mobile teams to organize drop zones and negotiating access for these teams with warring factions.

Unlike Bosnia, recipient communities were widely dispersed over a vast area, with limited transport infrastructure, and a rainy season that further constrained overland delivery of food and other commodities. The use of air drops in southern Sudan was impelled, in part, by these logistics constraints as well as by the conflict, and by the inability of relief agencies to reach beneficiaries any other way. The high cost per ton of

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[18] Yet another model for air drops supplementing civilian requirements because of internal conflict was the long-term (1961-75) U.S. government air drop operation in Laos. The air drops targeted isolated civilian populations that were relatively stable, with access to water, shelter, and fuel for cooking. However, the conflict in Laos prevented these communities from accessing sufficient staple food commodities. U.S. air drops primarily provided rice, double-bagged, half-filled, and dropped from low altitude. A number of cost-effective innovations were developed during this operation, including a technique for recovering pallets by using bungie cords. Maxwell, Dayton, Interview

air drops and the durability of the Sudan conflict have combined to lead relief agencies to invest resources in the development of transport alternatives to air drop deliveries, described earlier. However, relief agencies in southern Sudan have, as in Bosnia, also decided to work within the existing political-military *status quo*, negotiating access to civilians with the warring factions. Even with improvements in transportation facilities, therefore, air drops are likely to remain a long-term, expensive response to the southern Sudan emergency. The WFP and its colleague agencies have relied upon negotiations, rather than the use of military aircraft, to deal with the high threat environment in the region.

In summary, air drop operations have been conducted in a variety of environments, utilizing diverse concepts of operation. Such operations have been designed as short-term, stop-gap measures and as ongoing relief modes. Humanitarian air drops have been successful in some cases by relying on the use of military air drop assets, in some cases absent military assets, and, in northern Iraq, by the willingness to use military force to create a long-term solution (the security zone) to the humanitarian crisis, ending the requirement for air drops. Agencies operating air drops have integrated to varying degrees the air delivery, retrieval and distribution aspects of air drop operations. The cases examined in this chapter suggest that many aspects of Operation Provide Promise in Bosnia are common to all humanitarian air drop operations. On the other hand, these cases help illuminate the singular features of the Bosnia operations, with respect to the target population, the overall humanitarian strategy, the alternatives available, the air resources employed, and the political-military environment. Although future humanitarian air drops will each have unique aspects, certain policy and operational considerations are likely to recur for military planners. These policy and operational considerations are analyzed in Chapter V.

CHAPTER V

AIR DROP POLICY AND OPERATIONAL CONSIDERATIONS

V. AIR DROP POLICY AND OPERATIONAL CONSIDERATIONS

A. FIVE KEY POLICY FACTORS

Analysis of air drops in Bosnia, and comparison of OPP air drops with other recent humanitarian operations, suggest five key policy factors that should shape DoD decisions on whether to commence air drops, and how the air drops should be configured. These factors are:

- Condition of the target population, including capabilities and vulnerabilities
- Consistency with overall humanitarian strategy
- Feasibility of alternative delivery or other humanitarian options
- Availability of air resources to conduct operations, factoring in the threat to aircraft and crews
- Impact of air drop operations on the larger political-military environment.

Table V-1 illustrates how the five policy factors relate to air drop decisions.

Table V-1. How the Five Policy Factors Relate to Air Drop Decisions

POLICY FACTORS	No ◄——————————► Go	
Condition of target population including ability to distribute	INAPPROPRIATE	APPROPRIATE
Consistency with overall humanitarian strategy	NOT CONSISTENT	CONSISTENT
Alternative delivery or other humanitarian systems	FEASIBLE	UNFEASIBLE
Air resource availability	UNAVAILABLE	AVAILABLE AT ACCEPTABLE COST
Impact on political-military environment	NEGATIVE	POSITIVE

1. Condition of the Target Population

The condition of the target population, including their capabilities and vulnerabilities, is a major consideration in determining the appropriateness of air drops.

Factors such as the mobility of the population (whether the population can move from its current position, and whether it will move in search of relief supplies), the relative level of need, their susceptibility to attack and whether air dropped supplies will meet their basic needs determine whether air drops should be considered. A civilian population that is relatively static, protected from raids, suffering shortfalls that air drops can remedy, and that can make use of air dropped supplies is an appropriate target for air drop operations. Ideally, the civilian population should also be accessible to outside monitors who can assess needs, measure the impact of air drops, and recommend necessary changes in the air drop concept of operations. On the other hand, if populations are on the move, air drops are less likely to be effective. Or, if their essential needs are items (evacuation, skilled surgeons, protection from shelling, bulk heating oil and coal) that air drops cannot provide, air drops may be inappropriate. An important factor is whether air drops to target populations will serve as magnets for attacks or raids.

An especially critical element of the condition of the local population is its potential for ensuring adequate distribution of air dropped supplies, which varies widely in humanitarian emergencies. Ideally, as in the WFP operations in Sudan and in Operation Provide Comfort, trained international relief workers or appropriate military personnel should be on the ground to guide and control air drops. When these conditions cannot be met, planners should consider alternative strategies – like flutter drops in Bosnia, or negotiations with village elders in southern Sudan – to achieve wide dissemination. If conditions on the ground are chaotic, as in the first days of the Provide Comfort air drops along the Turkey-Iraq border, an immediate investment in establishing a system for distributing air dropped supplies equitably among the target population is required.

2. Consistency with Overall Humanitarian Strategy

A core policy factor for DoD planners is how to ensure coordination with humanitarian organizations – both within and outside the U.S. government – operating the relief operations. When an air drop option is under consideration, that option should be consistent with the overall humanitarian strategy developed by U.S. government policymakers and other decisionmakers involved with the effort, at the UN and elsewhere. In Bosnia, air drops were integrated within the framework of the multi-lateral, UN-led relief effort, but only after considerable debate about how air drops would affect relief workers on the ground, whether drops would help or hinder convoy operations, and how command and control would be exercised. Similarly, in southern Sudan, air drops

are planned and executed within an overall humanitarian planning framework: Operation Lifeline Sudan.

Air drops, like all relief programs, can bring costs as well as benefits to aid recipients. Dependency, disruption of agricultural cycles, destruction of market systems, unhealthy concentrations of displaced persons at air drop sites, and conflict within communities or with communities not receiving air drops are some of these potential costs. Since air drops are expensive and otherwise resource intensive, an important step in DoD air drop planning is early determination of whether they fit logically in the broader humanitarian strategy, and whether U.S. government and international coordination mechanisms are in place. In northern Iraq, air drops were followed quickly by a well-designed humanitarian strategy to allow Kurds to return to their homes, with sufficient resources and protection to survive. The northern Iraq air drops were an appropriate transition strategy as long-term solutions were being prepared. But in Bosnia, air drops served as a substitute strategy for vigorous efforts to open more cost-effective overland routes. Moreover, in Bosnia, the absence of a fully shared humanitarian strategy between U.S. military forces and international humanitarian agencies led to confusion about whether air drops should have continued in Bihac. If air drops fit in the overall humanitarian strategy, DoD planners should consider whether the mission requires U.S. military aircraft, or if alternatives are acceptable.

3. Consideration of Alternative Humanitarian Strategies

Given the high cost of air drops, especially military air drops, the acceptability of alternative humanitarian strategies will always be an issue in planning humanitarian operations in which air delivery is under consideration. Except in the most severe natural disasters, highway or air bridge delivery alternatives are generally available, although they will often be constrained by political or military threat in complex emergencies. Careful analysis is required to determine if an investment in negotiating convoy corridors will be more cost-effective, over time, than air drops.[1]

Alternative humanitarian strategies encompass both alternative delivery systems (ground, barge, train, convoy) and alternative approaches to dealing with a population in need that do not include delivery of relief supplies in their current location. Such

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[1] International relief organizations like UNICEF have had considerable success in negotiating so-called "corridors of tranquility" or "days of peace" to permit the delivery of humanitarian assistance, relying on an appeal to children's needs in emergencies.

alternative approaches could include evacuation of the population, eliminating the cause of the crisis (preventing attacks on the civilian population, or restoring freedom of movement so the population can supply its own needs), or creating financial incentives so that market forces can meet the need of target populations. Exploring such alternatives requires detailed consultation with local authorities, civilian food aid agencies and similar organizations that have developed such strategies in the past.

4. Availability of Air Resources

The availability of air resources, including aircraft, crews, and air drop equipment (parachutes, nets, pallets, tie-downs) will also vary widely in humanitarian operations. Important variables include the availability, accessibility, and proximity of staging areas; the duration of flights to the target populations; suitability of drop zones; and requirements for precision delivery systems.

A crucial element of aircraft and crew capacity is the acceptable risk to those assets. In natural disaster settings, like the Somalia floods of 1997, or when aircraft will transit friendly air space to reach the target, as in Turkey, the threat to well-maintained and well-operated aircraft and well-trained crews is limited. Bosnia clearly was at the other extreme, with multiple threats from terrain, local combatants, and nearby, potentially hostile national military forces. In complex humanitarian emergencies with civil strife and irregular forces, C3 capabilities within factions may be limited, increasing the risk to aircraft of attack by rogue units. When aircraft are clearly identifiable by national origin, as were the U.S. military C-130s in Bosnia, there may be an increased risk of attacks by factions either opposing U.S. intervention or seeking to draw the U.S. further into the conflict. Carefully designed public information campaigns (leaflet drops, radio announcements) may reduce the level of risk. Air drops initiated by impartial international organizations, like the WFP operations in Sudan, may also reduce the risk to air crews.

5. Impact of Air Drop Operations on the Political-Military Environment

The impact of air drop operations on the larger political-military environment is an important policy factor. Large-scale humanitarian air drop operations by U.S. forces require major, highly visible commitments of national resources, and they draw media attention. As in Bosnia, such operations will be scrutinized by contending parties and other bilateral actors as indicators of national intent. Operation Provide Comfort was

widely perceived as an indication that the U.S. would not stand by while the Iraqi government exterminated the Kurdish opposition.[2]

In reality, even impartial humanitarian air drops can significantly shape the political-military situation on the ground. Operation Provide Promise helped stabilize the Bosnian enclaves, not only as havens for suffering civilians but also as pockets of resistance in the Bosnian government's war effort. In southern Sudan, impartial WFP air drops undoubtedly result in additional rations for fighters on both sides. In summary, careful policy analysis is required to ensure that both the symbolic and practical impact of air drop operations are consistent with overall U.S. political and military objectives. As indicated earlier, the use of civilian aircraft instead of U.S. military assets may be considered.

B. RECOMMENDED ANALYTICAL FRAMEWORKS

Operation Provide Promise and other recent operations illustrate the complex policy issues that arise in air drop planning. Clearly, situational analysis is required when air drops are under consideration; air drops are neither inherently good nor inherently bad humanitarian tactics. Careful analysis of the specific relief setting – from conditions among the target population to the broader political-military milieu – determines whether air drops are the preferred option and, if so, whether U.S. military aircraft should conduct the operation. Air drops are often the costliest option per unit of relief goods delivered. On the other hand, air drops may be the only viable option in difficult relief environments, skewing normal cost-benefit equations.

Recent experience does suggest that core policy issues recur when the air drop option is under consideration. Five of these critical issues are examined above. The recurrence of these core policy issues further suggests a systematic set of questions that policymakers and planners must confront. This study recommends the construction and adoption of analytical frameworks to guide decisionmakers.[3]

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2 According to a senior U.S. military officer in Turkey at the time, another important reason for the rapid U.S. response to the plight of the Kurds was a request to the Bush Administration from the highest levels of the Turkish government for humanitarian support. Farmen, MG William, Interview

3 Authoritative planning guidance for theater airlift operations, including military operations other than war, is presented in Joint Publication 3-17. The planning matrices presented in this report are intended to supplement that planning guidance by focusing specifically on issues arising during humanitarian air drops. See Joint Publication 3-17, *Joint Tactics, Techniques, and Procedures for Theater Airlift Operations*, 18 July 1995, pages IV-1 to IV-15.

Table V-2, "Analytical Framework for Assessing the Utility of Air Drops," displays one such framework for policymakers and planners deciding whether U.S. military air drops make sense in a specific humanitarian response. A decision whether to use air drops as a humanitarian intervention follows a logical, if often implied, sequence. In this analytical framework, the answers to a series of questions lead to decisions (1) to pursue the air drop option (PURS); (2) to consider air drops along with other delivery options (CONS); (3) to move to alternative relief strategies (ALTR); or, to take no action at this time (NONE).

Units planning or executing air drop operations face another series of questions, based on an ongoing assessment of the mission. The answers to these questions determine whether (1) the air drop plan should go forward as currently configured (CONT); (2) the air drop plan should be re-assessed (REAS); the plan should be modified (MODF); or, air drops should be terminated (TERM). Table V-3, "Analytical Framework for Managing Air Drop Operations," displays this analytical framework.

C. CONCLUSION

Operation Provide Promise air drops were a significant, important humanitarian operation. Conducted under difficult conditions, they helped reduce human suffering in target areas, and provided an important psychological boost to innocent victims of the Bosnia conflict. From 1993 to 1994, units conducting the air drops were on the front lines of increasing U.S. resolve to deter genocide in the Balkans. Perhaps the most important legacy of Operation Provide Promise is the recognition that humanitarian air drops can be an effective component of a multi-faceted relief strategy. A useful by-product to a rich collection of mission successes, shortcomings, and lessons learned, from which analytical frameworks can be distilled to guide future operations. Because humanitarian crises like the Bosnian conflict are unique events, each with individual logistical and political-military factors, no standard template is available to decide whether air drops are the appropriate response to a given crisis. Organizing the lessons learned from Operation Provide Promise and other recent air drop experience in a systematic series of sequential questions does, however, offer a starting point for policymakers and planners tasked with decisions on whether, and how, U.S. military forces should be committed in this fashion.

Table V-2. Analytical Framework for Assessing Utility Of Air Drops

QUESTION	PURS*	CONS*	ALTR*	NONE*
1. Is there a population in need?		YES		NO
2. Do we have, or are we able to obtain, an accurate assessment of the type and level of need?		YES		NO
3. Is there clear agreement within the U.S. government, with affected authorities, and with key humanitarian agencies on specific, quantified, humanitarian objectives (example: target is delivery of 2100 calories per day, to reach 80% of the target population, through the winter months) to be achieved by the air drops?	YES	NO		
4. Can humanitarian goals be expressed as a clearly defined "end-state" for humanitarian operations?"		YES	NO	
5. Can humanitarian goals be achieved with strategies other than delivery of relief supplies (evacuation of target populations, relocation of target population, manipulation of market forces, protection of the populations from attack, support for local production, etc.)?		NO	YES	
6. Will alternative delivery systems meet the humanitarian needs of the target populations?		NO	YES	
7. Are air drops an interim approach that will provide time for implementation of a long-term humanitarian solution?		YES	NO	
8. Can the most critical humanitarian items (water, food, medical care, shelter, etc.) be met with air dropped resources?		YES	NO	
9. Can sufficient quantities of supplies be air dropped (above or in addition to what can be delivered by existing supply capabilities) to attain minimum humanitarian levels?		YES	NO	
10. Is the population sufficiently static to allow targeting of air drops?		YES	NO	
11. Is the risk air drops pose to the target population (collateral casualties and damage, conflict or exposure to fire during retrieval, health risks from damaged supplies, attack from outsiders) acceptable?		YES	NO	
12. Is the commencement of air drops likely to provoke military offensives in the operations area, against the target population or elsewhere?		NO	YES	
13. Will the commencement of air drop operations diminish the effectiveness (by diversion of resources, provoking response by combatants, spurring population migrations, etc.) of relief deliveries already underway, by truck convoy or other methods?		NO	YES	
14. Will reliable international or U.S. entities be able to assess the accuracy and effectiveness of air dropped humanitarian assistance?		YES	NO	
15. Are air drop operations consistent with and supportive of overall international relief operations in the theater?		YES	NO	

* PURS = Pursue the air drop option
* CONS = Consider air drops along with other delivery options
* ALTR = Review alternative strategies
* NONE = No action indicated

Table V-2. Analytical Framework for Assessing Utility Of Air Drops (Continued)

QUESTION	PURS*	CONS*	ALTR*	NONE*
16. Are appropriate U.S. government C3 systems in place (national command authority concurrence, PDD-56 pol-mil plan, ambassadorial concurrence and disaster declaration, OFDA plan of operations and DART team) to allow air drops to go forward?		YES		NO
17. Are coordination mechanisms in place with UN and other international relief organizations?		YES		NO
18. Is there a clear agreement among relief organizations and supporting military units on who will select air drop targets and determine cargo?		YES		NO
19. Will the commencement of air drops significantly increase the risk to civilian relief personnel on the ground in the theater?		NO	YES	
20. Will air drop operations significantly increase the threat to peacekeeping forces, other U.S. personnel, or allied personnel in the theater?		NO	YES	
21. Are the financial costs of meeting humanitarian targets by air drops, and the costs of sustaining operations, acceptable?		YES	NO	
22. Is the total cost of air drop delivery (humanitarian, financial, political, military) acceptable, compared to the total cost of alternative operations that will meet humanitarian targets?		YES	NO	
23. Is air drop the most cost-effective method (considering humanitarian, financial, political and military issues) of meeting humanitarian goals?		YES	NO	
24. Is military air drop the only feasible system for meeting humanitarian goals within the required timeframe?	YES	NO		
25. If only air drop is feasible, or if air drop is the most cost-effective strategy, are commercial sources or international agencies' resources (WFP, ICRC, etc.) available that can meet the humanitarian goals?	NO	YES		
26. If only air drop is feasible, or if air drop is the most cost-effective strategy, are other nations' air resources available to conduct operations?	NO	YES		
27. Are sufficient U.S. military assets available to conduct air drop operations?		YES	NO	
28. Is the risk to air delivery systems (from military action, accident, OPTEMPO considerations) acceptable?		YES	NO	
29. If the concept of operations envisages military personnel on the ground, is the level of risk for those personnel acceptable?		YES	NO	

* PURS = Pursue the air drop option
* CONS = Consider air drops along with other delivery options
* ALTR = Review alternative strategies
* NONE = No action indicated

Table V-2. Analytical Framework for Assessing Utility Of Air Drops (Concluded)

QUESTION	PURS*	CONS*	ALTR*	NONE*
30. Are air drop operations sustainable for the expected life of the emergency?		YES	NO	
31. Will air drop operations support overall political-military objectives in the operations area?		YES	NO	
32. Will the likely perception, by the competing factions, of air drop operations (air drops freeze the status quo, air drops are partisan, air drops show U.S. resolve, air drops are a precursor to greater U.S. involvement, etc.) undermine political-military objectives?		NO	YES	
33. Is the risk of air drops missing targets and being retrieved by opposing or other non-target populations acceptable?		YES	NO	

*PURS = Pursue the air drop option
*CONS = Consider air drops along with other delivery options
*ALTR = Review alternative strategies
*NONE = No action indicated

Table V-3. Analytical Framework for Planning Air Drop Operations

QUESTION	CONT*	REAS*	MODF*	TERM*
1. Is there clear agreement within the U.S. government, with affected authorities, and with key humanitarian agencies on specific, quantified, humanitarian objectives (example: target is delivery of 2100 calories per day, to reach 80% of the target population, through the winter months) to be achieved by the air drops?	YES	NO		
2. Are functioning coordination mechanisms in place with civilian agencies supervising relief operations and with allied units supporting the mission?	YES	NO		
3. Is it clear which relief supplies are to be delivered (food, medical, shelter, fuel, personal items, cold weather items, water treatment supplies, etc.) and who will make the decision on cargo content?	YES	NO		
4. Is there a process in place for assuring quality control of items to be air dropped, including expiration dates on food and medical items?	YES		NO	
5. Is a process in place for managing commodities donated to the air drop operation, including acceptance/refusal, transport management, quality control and storage?	YES		NO	
6. Is it clear who will purchase supplies, and pay for them?	YES	NO		
7. Are sufficient aircraft, trained crews, navigation equipment, liaison officers, meteorological staff, riggers, loading equipment, parachutes, pallets, nets, tie-down and other delivery requirements in place, accounting for expected seasonal variation in operational tempo?	YES	NO		
8. Will the concept of operations permit recovery of parachutes and other critical rigging equipment that may later be in short supply?	YES		NO	
9. Are acceptable drop zones available that are accessible to the target population?	YES			NO
10. Have all risks to delivery crews and force protection measures been considered?	YES	NO		
11. Is the legal status of aircrews and supporting personnel clear, under international law?	YES	NO		
12. Is the unit planning air drops receiving key documents and other guidance on overall humanitarian objectives in the theater?	YES	NO		
13. Are command and control systems clear for determining target location and dispatching flights?	YES		NO	
14. Are systems in place, preferably trained teams on the ground, to assess and report the effectiveness of the air drop operations (number of payloads reaching the drop zones, conditions of bundles after drop, percentage lost to opposing forces)?	YES		NO	

*CONT = Continue air drop plan for the present
*REAS = Re-assess air drop methodology
*MODF = Modify air drop plan
*TERM = Terminate air drops

Table V-3. Analytical Framework for Planning Air Drop Operations (continued)

QUESTION	CONT*	REAS*	MODF*	TERM*
15. Are systems in place, preferably trained teams on the ground, to assess and report the impact of the air drops on the target population (adequacy of retrieval, adequacy of distribution, collateral casualties and/or damage, appropriateness of supplies, cultural acceptability of supplies, hoarding, siphoning of supplies by fighters, delivery of medical supplies to skilled personnel, impact on local production)?	YES		NO	
16. If military or civilian observers are on the ground at the target site, are command and control of these units clear, and is adequate security provided?	YES	NO		
17. If assessment teams are not on the ground, is there a clear timetable for periodic civilian-military monitoring of the operation's effectiveness?	YES		NO	
18. Are standardized checklists available to personnel monitoring the air drops on the ground (providing standard definitions of air drop terminology, measurement indicators for accuracy, assessment methodology) to assist in accurate and comparable data gathering?	YES		NO	
19. If assessment of the target population suggests a modification in the content or packaging of air dropped supplies, is there an effective system in place for transmitting this information to loading sites?	YES	NO		
20. Is a process in place for processing requests from local government authorities or local humanitarian organizations for special air drop deliveries or changes in air drop cargo?	YES		NO	
21. Is there an effective system in place for communicating the content, time, location, purpose, and dangers of air drops to the target population?	YES		NO	
22. During the course of air drop operations, have changes in environmental factors enhanced alternate delivery options?	NO	YES		
23. During the course of air drop operations, have changes in environmental factors increased the risk to air crews, monitoring units, or civilian relief workers?	NO		YES	
24. Are the air drops causing unintended negative consequences for the target population (attacks, raids, disease, internal conflict, breakdown of order, unplanned migration, addiction)?	NO		YES	
25. Are air drop operations diminishing resources reaching the target population from other sources (overland delivery, internal production, traders, smuggling, market forces)?	NO		YES	
26. Is there a clear assessment of how the air drops are affecting the overall political-military situation?	YES	NO		
27. If there is a requirement that cargo be inspected by factional representatives, are procedures in place for scheduling and managing inspections with minimum disruption to operations?	YES		NO	

*CONT = Continue air drop plan for the present
*REAS = Re-assess air drop methodology
*MODF = Modify air drop plan
*TERM = Terminate air drops

Table V-3. Analytical Framework for Planning Air Drop Operations (Concluded)

QUESTION	CONT*	REAS*	MODF*	TERM*
28. Is there an adequate supply of relief items in the humanitarian pipeline for the expected duration of the air drop mission?	YES		NO	
29. Is a planning process in place for anticipating seasonal variation in cargo and frequency of drops, and for procuring, transporting and rigging seasonally variable cargo in a timely fashion?	YES	NO		
30. Is there an adequate system for transporting humanitarian supplies to the air drop loading point, under varying seasonal conditions, and for warehousing and accounting for the supplies?	YES		NO	
31. Are supplemental systems in place to assure the usefulness of air dropped supplies (including refrigeration and power for vaccines; water, cooking oil and fuel for bulk food commodities; trained medical personnel to administer health supplies; containers for transport and storage of perishables)?	YES	NO		
32. Are markings, instructions (including instructions on how medical supplies should be delivered to medical staff) and expiration dates understandable to the target population in their own language?	YES		NO	
33. Have steps been taken to inform the host nation population that the air drops are humanitarian?	YES		NO	
34. Is operational tempo sustainable for the expected duration of the air drop operations, taking into account seasonal variation in mission intensity?	YES		NO	
35. If allied or civilian aircraft are participating in the air drop operations, are the command and control arrangements clear?	YES	NO		
36. If allied or civilian aircraft are participating in the air drop operations, is it clear how long these aircraft will be available?	YES	NO		
37. Are accurate data on air drop operations being maintained, reported and disseminated (sorties, tonnage dropped, cost, numbers of targets, civilian population assisted, casualties, trends in malnutrition, mortality or morbidity rates, types of supplies provided)?	YES		NO	
38. Have goals for the air drop operation been attained?	NO			YES

* CONT = Continue air drop plan for the present
* REAS = Re-assess air drop methodology
* MODF = Modify air drop plan
* TERM = Terminate air drops

APPENDIX A

ACRONYMS

APPENDIX A
ACRONYMS

AAA	Anti-Aircraft Artillery
AEW	Airborne Early Warning
AGL	Above Ground Level
AI	Airborne Interceptor
AOC	Air Operations Cell
AW	Air Wing
AWADS	All-Weather Air Drop System
BSA	Bosnian Serb Army
CAOC	Combined Air Operations Center, NATO
CDC	Centers for Disease Control & Prevention
CDS	Container Delivery System
CMOC	Civil Military Operations Center
COMJTFPP	Commander/Joint Task Force Provide Promise
DART	Disaster Assistance Response Team
DoD	Department of Defense
EC	European Community
ECHO	European Community Humanitarian Office
ELINT	Electronic Intelligence
GAO	General Accounting Office
GOS	Government of Sudan
GPS	Global Positioning System
HDR	Humanitarian Daily Rations
HLWG	High Level Working Group
ICFY	International Conference on the Former Yugoslavia
ICRC	International Committee of the Red Cross
IR	Infrared
JFACC	Joint Forces Air Component Command
JTFPP	Joint Task Force Provide Promise
JULLS	Joint Universal Lessons Learned System
LIDAR	Aircraft Mounted Laser Radar
MRE	Meals Ready to Eat
MT	Metric Ton
NATO	North Atlantic Treaty Organization
NGO	Non-Governmental Organization
OFDA	Office of U.S. Foreign Disaster Assistance
OLS	Operation Lifeline Sudan

OPCON	Operational Control
OPP	Operation Provide Promise
RF	Radio Frequency
SAM	Surface-to-Air Missile
SPLA	Sudanese People's Liberation Army
SRSG	Special Representative of the Secretary-General
TACON	Tactical Control
TFAS	Task Force Able Sentry
TRIADS	Tri-Wall Aerial Delivery System
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNMO	UN Military Observers
UNPROFOR	United Nations Protection Force
USAF	U.S. Air Force
USAFE	U.S. Air Force Europe
USAREUR	U.S. Army Europe
USCINCEUR	U.S. Commander in Chief Europe
USEUCOM	U.S. European Command
USHZ	US Hospital Zagreb
USTRANSCOM	U.S. Transportation Command
VOPP	Vance-Owen Peace Plan
WFP	World Food Programme
WHO	World Health Organization

APPENDIX B

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13. ABSTRACT (*Maximum 200 words*)
This paper examines the U.S. military's humanitarian air drop operations to besieged civilian populations in Bosnia, conducted as part of Operation Provide Promise in 1993-94. These air drops – one of largest such operations ever attempted – took place within an extraordinarily complex political-military situation, in a high threat environment, in the midst of a multi-sided conflict. This paper attempts to provide a clear understanding of what happened during the Bosnia air drops, including the organizations involved; requirements determination; assembly and preparation of supplies to meet the requirements; supplies dropped; phases of the mission; locations; tonnage; budget; liaison with civilian organizations; and other operational factors. The paper analyzes the mission's effectiveness, examining the impact on the local population; assessing the delivery process; reviewing political-military effects of the air drops; and listing problems encountered. The study also examines other recent humanitarian air drop operations in Somalia, northern Iraq and southern Sudan, summarizing similarities to and differences from Operation Provide Promise. This paper makes recommendations to the Department of Defense on procedures that DoD might utilize when considering future humanitarian air drop operations, and provides analytical frameworks to guide policymakers and military planners.

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