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WAR RESERVE MATERIEL PREPOSITIONING
ITS HISTORY, ITS SIGNIFICANCE,
AND ITS FUTURE

THESIS

Jack E. King, Jr., Capt, USAF

AFIT/GLM/LS/91S-38

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ITS HISTORY, ITS SIGNIFICANCE, AND ITS FUTURE

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

Jack E. King, Jr., B.A.

Captain, USAF

September 1991

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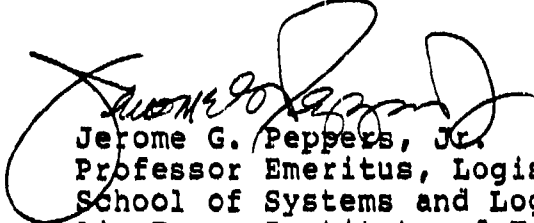
Foreword

by Jerome G. "Jerry" Peppers, Jr.

This work by Jack King is a labor of love. He arrived at the School of Systems and Logistics in the Summer of 1990 with this research in mind. Shortly after his classes began he came to me and asked me to be his thesis advisor. I asked him what topic he was planning to work and when he explained his intentions to me I was amazed at what he proposed to undertake. In particular, I was impressed with the thought he planned to accomplish all the reading necessary for this topic while at the same time maintaining acceptable grades in a rigorous graduate degree program. Anyway, I agreed to serve as his advisor and he left with his thesis idea intact.

In only a few weeks, Jack was back to me with an outline of what he intended to do in his thesis. We discussed his intentions, and discussed the coming academic workload, but he remained assured he could meet all his obligations adequately and still do his very special thesis. This final copy is evidence he could, and did, meet all his obligations superbly.

Jack has produced a valuable document containing a great deal of information which will become even more significant as time passes. Future researchers will find his work significant for its clarity and understanding of very complex conditions and philosophies. He has been an outstanding worker in accomplishing this thesis. He met or exceeded every condition imposed on him and created a high quality, important document. I envy him his capabilities and capacity for work.



Jerome G. Peppers, Jr.
Professor Emeritus, Logistics
School of Systems and Logistics
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August 1991

Preface

This effort was inspired, in part, by the determinable persistence of Mikhail Sergeyevich Gorbachev, President of the Union of Soviet Socialist Republics (USSR). Mikhail Gorbachev was born on 2 March 1931 in the Stravropol Territory (southern Russia). He joined the Communist Party in 1952 and has been a member of the Politburo of the Communist Party of the Soviet Union (CPSU) Central Committee since 1980. Since March 1985 he has been General Secretary of the CPSU Central Committee, Chairman of the USSR Council of Defense, and member of the Presidium of the USSR Supreme Soviet (Soviet Parliament) (111:255). His continued work in rebuilding the Soviet society is to be commended. Indeed, he has been awarded the Nobel Peace Prize.

The Norwegian Nobel Committee said the Soviet leader displayed a "leading role in the peace process which today characterizes important parts of the international community" (261). Among his admirers, President George Bush said, "[He] has been a courageous force for peaceful change in the world....He brought historically significant change, both politically and economic, to the Soviet Union and to Eastern Europe" (261). United Nations Secretary-General Javier Perez de Cuellar said, "Gorbachev had not only contributed in a remarkable manner to detente, but to enhancing the role of the United Nations as a peacemaking

and peacekeeping center" (261). German Chancellor Helmut Kohl, in a telegram to Gorbachev, summed it up this way:

Your personal contribution to the improvements of relations between East and West, to overcoming the division of our continent, to breakthroughs in disarmament and arms controls, and solutions of regional conflicts is worthy of highly deserved praise. (261)

Mikhail Gorbachev is responsible for introducing the world to perestroika (111:24), and glasnost--a widespread spirit of openness within the Soviet Union. Both processes have combined to "open the eyes" of many people, persuading most, at home and abroad, that a dominant American military presence in central Europe is no longer needed, or desired. Subsequently, the future of WRM lies in the balance.

This study puts USAF War Reserve Materiel (WRM) into perspective. "For better or worse," stated Soviet President Mikhail Gorbachev, ". . . history is made without rehearsals. It cannot be replayed. That makes it all the more important to perceive its course and its lessons" (111:214). This study does not presume to be an all-encompassing study of the USAF's WRM prepositioning program. Instead, its purpose is to serve as an introduction for those who wish to further their knowledge of USAF WRM prepositioning. To fully understand the relevant issues concerning the placement of critical European WRM stockpiles, several areas of research are encompassed in this review. To begin, an historical analysis of US military logistics is provided. Then, an overview of current, world-wide events taking shape around

the world, with particular emphasis given to their effects on US decision-making strategies, is accompanied by a synopsis of both US and Soviet military doctrine. This overview supports the necessity to make a reasonable and expedient decision regarding the future of the strategic mobility triad (airlift, sealift, and prepositioning) as it exists today. Considerable attention is then focused on a detailed analysis of one small player in the world of prepositioning--USAF WRM, and its vital role as a component of the strategic mobility triad.

What, exactly, is America to do? Many, presumably optimistic that peace is blossoming into a bouquet for all the world to enjoy, would dictate that America can now withdraw her forces and leave European affairs to Europeans. Tributes offered by leaders from around the globe to the work accomplished by Mikhail Gorbachev would ring in consonance with such a concensus. With respect to the strategic placement of USAF War Reserve Materiel, should America, in fact, leave European affairs to Europeans? Maybe, . . . maybe not.

Acknowledgements

This research could not have been accomplished without the direct help of several influential people. To begin, I owe my deepest gratitude to my thesis advisor, Professor Emeritus Jerome "Jerry" Peppers. Jerry's continued guidance catapulted me on a journey I shall never forget. His encouragement helped me to produce a thesis of which I am quite proud. Major Cal Sims provided the jump-start that got me going in the right direction. My academic advisor, Major Jacob Simons, helped me to "wade through the swamp" I had managed to find myself in during the early stages of this effort. The work of Robert Frank Futrell was of considerable value to my research in US doctrine as was the work of Harriet Fast Scott and William F. Scott in my understanding of Soviet doctrine. To all three I am greatly indebted.

Finally, there is but one who stayed up late with me, brought me milk and cookies, and understood when I could not always "get away" from it all--my wife and best friend, Linda Mauree. To Linda, I owe much more than my heart-felt gratitude--I owe my enduring love, always and forever.

Jack E. King, Jr.

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Abstract

This study analyzed the effects of perestroika on the decisions and strategies USAF planners must employ regarding the future disposition of War Reserve Materiel (WRM). This study is intended to lay the foundation for further study in the wider realm of DOD materiel reserves--a foundation upon which others are expected to improve. This study puts WRM into perspective. Budgetary constraints and increased commitments abroad, with particular emphasis on Third World nations, continues to influence prepositioning's significance as a component of the strategic mobility triad. An historical analysis of US military logistics is followed by a detailed synopsis of US and Soviet military doctrine. In turn, an overview of current events taking shape around the world supports the necessity for US defense planners to make reasonable and expedient decisions regarding the future of the strategic mobility triad. Considerable attention is devoted to a detailed analysis of USAF WRM, focusing on several options regarding the future strategic placement of critical WRM stockpiles, given the "epidemic of democracy" racing throughout the world today. This study employs the historical research method with no attempt to derive a single, "optimum" solution but, more importantly, to serve as an educational tool for those who must.

WAR RESERVE MATERIEL PREPOSITIONING
Its History, Its Significance, and Its Future

I. Introduction

Chapter Overview

This chapter initiates the discussion of United States Air Force (USAF) war reserve materiel (WRM) prepositioning. Discussion begins with a brief review of the problem background, and continues with the problem statement and research objectives. Assumptions, in an attempt to guide the analysis of the research problem, follow. This chapter then sets the stage, provides the scope, and addresses the limitations of the research. Finally, an explanation of key terms concludes this chapter, else the reader is deprived basic underpinnings of a thorough indoctrination of USAF WRM.

Background and Justification

Inadequate strategic transport capability impairs the deployment capability of all United States Air Force units. Unified and specified commanders, recognizing the importance of war reserve materiel prepositioning as a method partially resolving this problem, have joined their forces to examine this delicate issue. Unsurprisingly, they concluded the Air Force's mission "is seriously impaired by the lack of timely deployment capability and availability of prepositioned equipment assets to satisfy mission requirements" (110). Air Force units deployed to theaters of war must rely on indigenous (prepositioned) materiel "during the first thirty

days of the anticipated operation" (77:7). Without this prepositioned war reserve materiel, the capability of deployed USAF units to meet projected requirements is limited.

Problem Statement

What future role can the United States Air Force expect prepositioned central European war reserve materiel to play in light of dynamic, historical, international trends? More specifically, what effect has perestroika (the social and economic restructuring process within the Soviet Union) had on the USAF's current WRM prepositioning strategy?

Research Objectives/Investigative Questions

In light of perestroika, the objective of this research was to offer practical insight into the effects of a recent "epidemic of democracy" throughout the world on central European stockpiles of prepositioned USAF WRM. This analysis required a review of military logistics history pertinent to materiel prepositioning and it required an in-depth look at the forces at work in both Europe and the US which affect the decision-making responsibilities of those in command. Questions generated for this research follow.

1. What does the USAF do with central European WRM should the presumed drawdown of forces become reality?
 - a. Preposition WRM stocks at current sites or other nearby overseas bases?

- b. Preposition WRM stocks at or near stateside ports of embarkation?
 - c. Return WRM stocks to service supply accounts for subsequent redistribution to units?
 - d. Sell, lend/lease, or donate to allied nations?
2. What lessons does history teach us in regard to prepositioned WRM assets?
 3. What combined role does the strategic mobility triad (airlift, sealift, and prepositioning) play?
 4. In view of the probable mobility of combat, how can fixed-site prepositioning of WRM be improved?

Assumptions

Assumptions assist in the evaluation of the problem. Without simplification, potential solutions may be overlooked or misinterpreted. The following assumptions guided the analysis of the research problem.

1. Perestroika and European democratic reforms, coupled with current American economic pressures, will, in all likelihood, persuade public opinion at home and abroad to "force" the withdrawal of many American forces (and their equipment) from European bases. In turn, the drawdown of some bases will occur.

2. History tends to repeat itself--it is apparently cyclical in nature. Nevertheless, historical trends to some degree can be overcome and need not be repeated.

3. Present-day prepositioned WRM stocks represent actual wartime needs (no waste) for a period of preplanned days thereby allowing sufficient time for the initial resupply effort to take effect.

4. Future conflicts may be expected to reflect a conventional moderate-to-low intensity, limited theater/limited contact relation. People from around the globe must anticipate the concept of a "contradictory, but interconnected, interdependent and, essentially, integral world" (111:140). Soviet President Mikhail Gorbachev believes foreign policy must hinge on this foundation (111:140). Heretofore, politics have historically served to rationally explain and justify war. It is for this reason that Mikhail Gorbachev is pointedly candid about the politics of a future war--his aim is to "[discard] the traditional notions of war and peace" (111:141). He continues by stating that "the fundamental principle of the new outlook is very simple: nuclear war cannot be a means of achieving political, economic, ideological or other goals. . . . Nuclear war is senseless; it is irrational" (111:140) (Emphasis in the original). Nevertheless, smaller geographical wars do not equate to smaller logistics requirements, including WRM. Nor do they eliminate the potential of nuclear weapon use.

5. A soldier's profession is war; the Department of Defense (DOD) will remain prepared for war although optimistically visioning a peaceful world in which to live. Circumstances, perhaps beyond the control of the US, may at times remind the world there is a need to maintain some level of vigilance. Operation Desert Shield attests to the necessity to maintain a minimally adequate level of organic capability because it certainly takes time to "spin up" the war-making machinery.

Scope and Limitations

The objective was to assess the continued need for prepositioned war reserve materiel in central Europe. Also, the research was directed to determine the disposition of war reserve materiel required to maintain a constant state of readiness in the event the preservation of peace through traditional methods of deterrence fails, as in the case of Operation Desert Shield (August 1990 - March 1991). This research, perhaps lending itself to further study in the wider realm of DOD materiel reserves, will consider only USAF WRM prepositioned in central Europe. Although applicable classified information is available, none was integrated in this report due to the difficulty involved in obtaining, storing, and using classified material. It is likely that classified material would have enhanced portions of the report, but the effort has not suffered for lack of classified material.

Explanation of Terms

Aerial Port. An airfield that has been designated for the sustained air movement of personnel and material, and to serve as an authorized port for entrance into or departure from the country in which located (60:7).

Airdrop. The unloading of personnel or materiel from aircraft in flight (60:16).

Air Campaign. A connected series of operations conducted by air forces to achieve joint force objectives within a given time and area of operations (67:6).

Airlift. The transportation of personnel and/or materiel by air, as distinguished especially from surface transportation (123:29).

Airlift Capability. The total capacity expressed in terms of number of passengers and/or weight displacement of cargo that can be carried at any one time to a given destination by available air transport service (60:18).

Air Superiority. That superiority in air power or air control, local or general, held when an air force has greater combat effectiveness than that of an opposing air force, especially if the degree of this superiority permits the conduct of air operations without prohibitive interference by the opposing air force (123:37).

Air Supremacy. That degree of air power or air control, local or general, held when an air force can impose its will upon any hostile air force at any time or any place within the realm of control; the highest degree of air superiority (123:38).

Allowable Load (AL). The amount of cargo, determined by weight, cubic displacement, and distance to be flown, which may be transported by a specific aircraft (60:24).

Armed Forces. A term used to denote collectively all regular components of the United States Army, Navy, Air Force, Marine Corps, and Coast Guard (60:35).

Availability. The fraction of the maximum available time a system is actually operable. Synonymous with operational readiness (70:81).

Axis Power. Any one of the three powers that formed an alliance for aggressive action prior to World War II (i.e., Germany, Italy, or Japan) (123:64).

Bare Base (BB). A base which has, as a minimum, a runway, taxiway, and parking areas adequate for the deployed force, and an adequate source of water that can be made potable (67:15;70:86).

Bare Base System. A USAF system that consists of Harvest Eagle, Harvest Bare, Harvest Falcon, and fuels mobility support equipment. It is designed to provide minimum essential troop cantonment facilities (billeting, showers, latrines, and food service) and operational support (offices,

shops, shop equipment, POL, and runway matting). Units using this system are expected to deploy with equipment and spares peculiar to their operation in sufficient quantities to allow self-support until resupply is established. Support is available for war or contingency taskings, and can be requested on an individual basis to satisfy mission requirements (67:15;78:62).

Base Augmented Support Set (BASS). A grouping of reusable, lightweight, air transportable equipment and facilities to provide base operating and housekeeping support. Each set is designed to support 4,500 personnel in a bare-base or austere environment. A set can be used to establish an initial support capability when no support facilities exist at the deployed location, or to augment and expand a support capability already existing at the deployed location. BASS is designated WRM and is part of the HARVEST BARE system (60:10).

Base Level Self-Sufficiency Spares (BLSS). A USAF WRM package of spares and repair parts intended for use as base support for units tasked to fight in-place during wartime considering the available maintenance capability. BLSS represents the difference between the peacetime operating stock levels expected to be available at the unit in wartime and its total wartime requirement for a specified period. These spares are authorized in addition to, but will not duplicate, items contained in a War Readiness Spares Kit (67:16;78:62).

Berlin Airlift. An operation by the USAF and the Royal Air Force from June 1948 to September 1949 for the purpose of flying food/supplies into West Berlin. The airlift was a measure designed to circumvent a Soviet blockade against all surface traffic across the Soviet zone into West Berlin. The USAF carried approximately 75% total tonnage (123:79).

Caretaker Status. A nonoperating condition in which the installations, materiel, and facilities are in care and limited preservation status. Only a minimum of personnel is required to safeguard against fire, theft, and damage from the elements (60:60;123:102).

Cargo Category Codes. Descriptive codes assigned to deploying cargo according to its characteristics and properties. These codes are used for transportation planning in accordance with Air Force Regulation 28-3 (74:A1-1-1-3).

C-Day. A designation for the day on which a deployment operation commences or is to commence. The deployment may be movement of troops, cargo, weapons systems, or a combination of these elements using any or all types of transport. The letter "C" will be the only one used to denote the above. The highest command or headquarters responsible for coordinating planning will specify the exact meaning of C-day within the aforementioned definition. The command or headquarters directly responsible for execution of the operation, if other than the one coordinating the planning, will do so in light of

the meaning specified by the highest command or headquarters coordinating the planning (60:62;78:62).

Civil Reserve Air Fleet (CRAF). A group of commercial aircraft (owned and operated by private industry), with crews, allocated in time of emergency (to ensure immediate and continuous logistical support) for exclusive military use in international and/or domestic service (60:68).

Cold War. A state of international tension wherein political, economic, technological, sociological, psychological, paramilitary, and military operations (short of overt armed conflict involving regular military forces) are employed to achieve national objectives (60:72).

Collocated Operating Base (COB). An active or reserve allied airfield designated for joint or unilateral use by US wartime tactical augmentation forces or for wartime relocation of in-place US forces (60:72;74:A1-1-1-3).

Combat. A hostile encounter with an enemy which involves direct participation in the application of force against an enemy, a high risk of direct exposure to the application of force by an enemy, or assignment to an area or position where there is a high risk of capture (67:19).

Combat Forces. Those forces whose primary missions are to participate in combat (60:74).

Combat Operations. Those operations involving combat or directly supporting it; combat (123:126).

Combat Support Units. Those organizational elements whose primary missions are to provide support to the combat forces and which are a part of, or prepared to become a part of, a theater, command, or task force formed for combat operations (60:75).

Command Overflow. The temporary storage of PACER FLEX consumables computed to support sorties identified in the USAF War and Mobilization Plan for prepositioning by Major Commands (MAJCOM), but for which the MAJCOMs have no storage or maintenance capability (78:62).

Contingency. Armed conflict, short of general war, involving the overt engagement of the military forces of two or more nations. It involves no nuclear attack of the CONUS. It may continue without abatement for an indefinite period of time (70:393).

Contingency Operations. Less than general or limited war: operations with limited objectives (74:A1-1-1-3).

CONUS. Continental United States. The 48 contiguous states and the District of Columbia, including territorial waters, and excluding Alaska and Hawaii (60:86;70:115).

Conventional Forces. Those forces capable of conducting operations using non-nuclear weapons (60:90).

Conventional Weapons. Non-nuclear weapons. Excludes all biological weapons, and generally excludes chemical weapons (except for existing smoke and incendiary agents) and agents of the riot-control type (70:175).

D-Day. The particular day on which an operation begins or is to begin. In mobilization planning, the day hostilities are to begin. For USAF planning, D-day is considered to be a specific date which ends at 2400Z (60:103;78:62).

Debarkation. The unloading of troops, equipment, or supplies from a ship or aircraft (60:104;70:199).

Deployment. The movement of combat forces (may be strategic and/or tactical) to a new area of operations, typically overseas. Includes emergency movements, scheduled rotations, and related exercises (70:213).

Disarmament. The reduction of a military establishment to some level set by international agreement (60:116).

Doctrine. Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application (60:119;123:173).

Embarkation. The loading of troops with their supplies and equipment into ships or aircraft (60:130;70:252).

Emergency War Order (EWO). An implementing operations order written in support of the Joint Chiefs of Staff (JCS) Single Integrated Operational Plan (SIOP) intended to launch combat-ready weapons systems maintained in readiness for, or generated for, first strike wartime operations (67:31).

Employment. The tactical usage of aircraft in a desired area of operation. In airlift operations, a movement of force into or within a combat zone, or objective area, usually in the assault phase (67:31;70:253).

Escalation. An increase in scope or violence of a conflict--deliberate or unpremeditated (60:133;70:268).

Expendable Supplies. Supplies which are consumed in use, such as ammunition, paint, POL, drugs, medicines, etc. Also includes supplies which lose their identity, such as spare parts, etc. When issued, these items are consumed in maintenance operations or other activities and are, therefore, dropped from accountability (60:138;70:275).

Forward Basing. The stationing of military forces outside the CONUS in a foreign nation (190:i).

Forward Operating Base (FOB). An airfield, generally located closer to the enemy than main or collocated operating bases, which is not the home base of combat forces, that will be used for war operations or used to support tactical operations without establishing full support facilities (67:34;70:306).

Fuels Logistical Area Summary (FLAS). Authorizes petroleum, oils, and lubricants (POL) for all flying activities listed in the Wartime Aircraft Activity (WAA) document, specifically based upon the number of planned sorties and sortie duration for each location of a particular weapons system (78:62).

General War. Armed conflict between major powers in which the total resources of the belligerents are employed, and the national survival of a major belligerent is in jeopardy (60:159).

Guerrilla Warfare. Warfare or hostile activity in which the tactics of guerrillas are employed. Such tactics are characterized by short, sharp engagements, depredations, and surprise attacks, often behind enemy lines (123:240).

Harvest Bare. A nickname for an air transportable package that provides bare base aircraft operational support facilities (hardwall shelters) for a host base and two tenant 24 PAA munitions carrying squadrons. Base and personnel support packaging consists of modular hardwall shelters and equipment designed to house, feed, and conduct normal functions of a combat support unit. Aircraft support consists of maintenance shelters, operations shelters, and shop equipment required to support an operational unit. Specifically, support includes supply, storage, munitions/missile build-up, aircraft fuel tank build-up, aircraft maintenance shops, vehicle maintenance, aircrew briefing facility, aircraft arresting system, and airfield lighting system. Standard mobility equipment must be sent by the deploying unit (67:37;78:63).

Harvest Eagle. A nickname for an air transportable, light-weight package of general purpose housekeeping equipment, spare parts, and supplies required for support of USAF forces and personnel under bare-base conditions. Examples of Harvest Eagle equipment are water purification units, tents, and showers. Each kit is designed to provide softwall housekeeping support for 1,100 persons. Harvest Eagle is not intended to be an all-inclusive package of logistics support for sustained air operations; however, it may be used until augmented by Harvest Bare (78:63).

Harvest Falcon. A nickname for an air transportable package of hardwall shelters and softwall tents, and equipment required for base and personnel housekeeping, and aircraft support in bare-base conditions. Harvest Falcon operates under the same concept as Harvest Bare in that it provides support for sustained operations. Harvest Falcon, however, uses tents instead of hardwall shelters for most housekeeping (billets, kitchens, showers, etc.) support. Harvest Falcon may be deployed to support operations anywhere in the world. Support provided includes power and water distribution, billeting, dining, aircraft and vehicle maintenance, warehouses, fire rescue, airfield lighting, and administrative facilities. Harvest Falcon provides the capability to bed-down 55,000 personnel and 750 aircraft. This capability is composed of 37 squadron packages that provide support at 13

separate bed-down locations and one special operations force (SOF) location (78:63).

Housekeeping Set. Selected war reserve materiel items of housekeeping and administrative equipment and supplies (exclusive of subsistence and vehicles) prepositioned at designated locations. Housekeeping sets are used to provide expanded support for personnel when base wartime requirements exceed the limits of normal day-to-day operations. These sets are sized to support increments of 275 personnel at a level of comfort adequate to support wartime tasking, not to duplicate peacetime living standards. Housekeeping sets increase material assets at existing operational bases or provide a source of assets at standby bases (78:63).

Ideology. A body of ideas, especially as related to economic, social, religious, and political patterns of thought, usually constituted or given form by reasoned pronouncements, that underlies a culture or gives direction to a movement (123:262).

Industrial Mobilization. Industry's transformation from its peaceful activity to the fulfillment of the military program necessary to support national military objectives. Includes the mobilization of materials, labor, capital, productive facilities, and contributory items and services essential to the military program (60:182).

Infrastructure. A term recently adopted from the French, especially among personnel of the North Atlantic Treaty

Organization, signifying the framework of material things that provide the means of mounting and sustaining an operation or campaign (123:268).

Intermediate-Level Maintenance. That maintenance that is the responsibility of and performed by designated maintenance activities for direct support of using organizations. Its phases normally consist of calibration, repair, or replacement of damaged or unserviceable parts, components, or assemblies; of the emergency manufacture of nonavailable parts; and of providing technical assistance to using organizations (60:192)

Intertheater Airlift. The air movement of personnel and materiel between or among different theaters of operation, especially between the CONUS and overseas areas, normally over long distances (67:42;123:275).

Intratheater Airlift. The air movement of personnel and materiel within a theater of operation, normally over short distances (123:275).

Joint Chiefs of Staff (JCS). A body within the DOD consisting of the United States Army Chief of Staff, the Chief of Naval Operations, the United States Air Force Chief of Staff, and a chairman. Together, they serve as principle military advisors to the President, the National Security Council, and the Secretary of Defense. They are authorized to conduct certain military operations direct, such as those of continental air defense. The JCS was formally authorized by the National Security Act of 1947 (123:283).

Joint Use (JU) Equipment. Equipment authorized to support a peacetime mission of one organization which ceases to exist in wartime that is applied against a WPARR requirement for another organization. The authorization is based on the peacetime need and the equipment is not WRM. (A pickup truck would be designated as JOINT USE if it were used by the base civil engineering housing inspector in peacetime and used in wartime to provide perimeter security by the security police.) All peacetime assets (not just vehicles) are to be considered for joint use application to wartime requirements by the unit WRM Readiness Board (78:63).

Korean War. A limited war (25 June 1950 - 27 July 1953) conducted in Korea between the forces of the United Nations and the forces of North Korea and communist China (123:288).

Lend-Lease Act. An act passed by Congress (put into effect on 11 March 1941) empowering the President to provide war materiel, supplies, and services to those countries whose defense he deemed vital to the defense of the US. The Lend-Lease Administration was established by executive order 10219 on 28 October 1941. During the period 11 March 1941 to 31 July 1946, goods valued at more than \$50 billion were provided. The principle recipients of those goods were the British Empire, the USSR, France, and China. Estimates between \$7-\$13 billion of goods were returned to the US on Reverse Lend-Lease (123:297).

L-Hour. The specific hour on C-day, expressed in Greenwich Mean Time (GMT), which serves as a common reference time to measure the movement of weapons systems, equipment, supplies, personnel, and transportation during deployment operations (67:44;74:A1-1-1-6).

Limited Base (LB). An austere manned base that normally has no permanently assigned operational tactical forces, but may possess a small force for special operations (weather surveillance, alert aircraft, special purpose aircraft, etc.). With personnel augmentation, this base is capable of receiving deployed forces. It may have facilities for communication, air traffic control, base supply, navigational aids, maintenance, munitions, weather, medical services, billeting, feeding, transportation, and operational support. It may or may not be supported in peacetime as a satellite of a main base. War reserve materiel, including POL, may be maintained in a state of readiness for use by a deploying force. Additional support personnel and equipment must be provided to initiate and sustain operations (67:45;74:A1-1-1-6).

Limited War. Armed conflict short of general war, exclusive of incidents, involving the overt engagement of military forces of two or more nations (60:211).

Limiting Factor (LIMFAC). A factor or condition that either temporarily or permanently impedes mission accomplishment. It typically exists between planned personnel

and/or materiel and available resources that has a significant impact on capability to perform the wartime mission (76:456).

Logistics. That system established to create and sustain military capability (200:iv).

M-Day. The day on which mobilization begins or is postulated to begin. For planning purposes, M-day is considered to be a specific date which ends at 2400Z (60:112,226;78:64).

Main Base (MB). A base planned for permanent occupation in peacetime at a location suitable for wartime utilization, on which all essential buildings and facilities are erected, operational, and of a standard adequate to develop full use of its war combat potential. Total organizational/intermediate maintenance capability exists for assigned weapon systems. The intermediate capability may be expanded to support other weapons systems to be deployed to the MB (60:218;67:46).

Major Command (MAJCOM). A major subdivision of the Air Force that is assigned a major part of the Air Force mission. MAJCOMs report directly to Headquarters United States Air Force (HQ USAF) (67:47).

Marine Amphibious Brigade (MAB). A task organization normally built around a regimental landing team, a provisional Marine aircraft group, and a logistics support group. It is capable of conducting amphibious assault operations of a limited scope (60:223).

Material. Any raw, in process, or manufactured commodity, equipment, component, accessory, part, assembly, or product of any kind (70:431).

Materiel. All items necessary for the equipment, maintenance, operations, and support of military activities without distinction as to their application for administrative or combat purposes (60:225;70:433).

Military Capability. The ability to achieve a specified wartime objective (win a battle or war, destroy a target set). It includes four major components: force structure, modernization, readiness, and sustainability. Force structure refers to the numbers, size, and composition of defense units. Modernization applies to the technical sophistication of forces and equipment. Readiness equates to the ability of forces to deliver outputs for which they were designed. Sustainability refers to the "staying power" of those forces (60:229-230).

Military Strategy. The art and science of employing the armed forces of a nation to secure the objectives of national policy by the application of force, or the threat of force (60:232;70:448).

Military Traffic Management Command. The single manager operating agency for military traffic, land transportation, and common-user ocean terminals (60:233).

Mobility. The quality or capability of units which permits them to move from place to place while retaining the ability to fulfill their primary wartime mission (60:238).

Mobilization. The process by which the Armed Forces or part of them are brought to a state of readiness for war or other national emergency. This includes assembling and organizing personnel, supplies, facilities, and material for active military service (60:238;70:455).

National Security Act. An act of Congress approved 26 July 1947 that provided a comprehensive program for the security of the United States. The act established three military departments within the National Military Establishment (Department of the Army, Department of the Navy, and Department of the Air Force). It likewise established the National Security Council, the Central Intelligence Agency, and the National Security Resources Board. It also provided means and procedures for coordination and unified effort in problems of national defense (123:340).

NATO PPP. (See Prepositioning Procurement Packages.)

North Atlantic Treaty Organization (NATO). A multinational organization founded on the Brussels Treaty of 1948 between France, the United Kingdom, Belgium, Netherlands, and Luxembourg. American negotiations with the Brussels powers began with the Vandenberg Resolution, which passed the Senate on 11 June, 1948. The US then joined eleven other nations in creating NATO on 4 April 1949 as a collective

security organization in consonance with the United Nations charter (148:214). This multilateral agreement by states to improve their power position by joining together in defense of their common interests was developed as the primary bulwark for European defenses against communist intervention; more specifically, in response to Moscow's unwillingness to reduce its post-war troop strength, and to parallel emergence of communist regimes in Soviet-occupied Eastern Europe. Central Europe was clearly the focus of the alliance. Presently, 16 countries comprise NATO (US, Canada, Iceland, Norway, United Kingdom, Netherlands, Denmark, Belgium, Luxembourg, Portugal, France, Italy, Greece, Turkey, Germany, and Spain) (59:13;123:347).

Operating Base. Any area or installation from which an operation is carried out (123:358).

Operational Readiness. The capability of a unit, ship, weapons system, or equipment to perform the mission or function for which it is organized or designed (60:264).

Organizational-Level Maintenance. Maintenance that is the responsibility of and performed by a using organization on its assigned equipment. Its phases normally consist of inspecting, servicing, lubricating, adjusting, and replacement of parts, minor assemblies, and subassemblies (60:266).

Other War Reserve Materiel. Constitutes the prestocked portion of the total wartime requirement and represents the change between the total wartime requirement and War Readiness

Spares Kit, Base Level Self-sufficiency Spares, and primary operating stocks (POS). It is that part of the war reserve requirement needed to augment WRM WRSK, BLSS, and POS. Its purpose is to sustain wartime operations until the point where the rate of industrial production of assets meets total war needs (78:64).

Outsized Cargo. Cargo programmed for air transportation that exceeds the capabilities of C-130 or C-141 aircraft and requires the use of a C-5 aircraft. It is cargo that exceeds 828 inches long or 117 inches wide or 105 inches high, but is less than 1453 inches long by 216 inches wide by 114 inches long (67:55;70:504;74:A1-1-1-8).

Over-sized Cargo. Cargo programmed for air transportation for which any single dimension exceeds 104 inches in length, 84 inches in width, 96 inches in height, or exceeds 10,000 pounds in weight (67:55;74:A1-1-1-8).

Pacer Flex. The name assigned to WRM prepositioned in CONUS by AFLC to support the planned non-nuclear activities reflected in the USAF War and Mobilization Plan. Quantities of war reserve materiel required to be prestocked for follow-on support of wartime activities (67:55;78:64).

Parity. A condition at a given point in time when opposing forces possess nuclear offensive/defensive systems approximately equal in overall combat effectiveness (60:254).

P-Day. That point in time at which the rate of production of an item available for military consumption equals the rate at which the item is required by the armed forces (60:274).

Perestroika. Soviet term used to identify the social and economic restructuring process inaugurated at the 1985 Plenary Meeting of the Communist Party of the Soviet Union Central Committee under the leadership of General Secretary Mikhail Gorbachev (111:24).

POL. Acronym for petroleum, oils, and lubricants. A broad term which includes all petroleum and associated products used by the US armed forces (60:276;70:520).

Policy. An accepted or settled way for approaching a problem, for doing a thing, or for deciding what things to do and in what order, each dictated either by principle or by expediency, and determined by appropriate authority at the level where the way is settled upon. Overall policy or policies in the USAF are the function of the Secretary of the Air Force, working under general policies established by the Secretary of Defense (123:394).

Politico-Military. Of, or pertaining to, international politics and military affairs, especially as used in connection with advising government officials and military commanders in conferences with foreign power representatives (123:394).

Port of Debarkation. A water or aerial terminal at which troops, units, military sponsored personnel, unit impedimenta, and materiel are debarked from the mode of carriage. An authorized point of entry into a foreign country or the CONUS (70:528).

Port of Embarkation. A water or aerial terminal at which troops, units, military sponsored personnel, unit impedimenta, and materiel are embarked from the mode of carriage. An authorized point of entry into a foreign country or the CONUS (70:528).

Prepositioned War Readiness Materiel (PWRM). That portion of WRM required to be positioned (located) prior to hostilities at or near the planned point of use or issue to the user. Its purpose is to ensure timely support of a specific project (mission) or designated force during the initial phase of war, pending replenishment shipments (78:65).

Prepositioning. The stockpiling of equipment and supplies at or near the point of planned use. Prepositioning reduces reaction time and ensures timely support of a specific force during initial phases of an operation. Reinforcement forces are deployed to use prepositioned equipment/supplies when required to fulfill national objectives (60:284;70:533).

Prepositioning Procurement Packages (NATO PPP). A USAF program to duplicate 11th AF (Alaska), MAC, SAC, and TAC mobility equipment for the purpose of saving strategic airlift when deploying to Europe. Equipment is high weight or cube

requiring minimum maintenance for long term storage. Items included are those required to load, launch, or recover aircraft, aircraft jacks, towbars, maintenance stands, deicers, special purpose vehicles, generators, air conditioners, fire extinguishers, etc. This special category of WRM equipment is stored and maintained as WRM at, or as close as possible to, the point of intended use, somewhere in US Air Forces Europe (USAFE) (78:64).

Prestocked War Reserve Materiel. That portion of WRM stocked in the CONUS as Defense Logistics Agency (DLA) depot stock which is required for support following the time period covered by prepositioned WRM stocks (78:65).

Prestocking. Designated portions of WRM which are in addition to the prepositioned reserves, set aside for a specific purpose or force, and prestocked at specific locations in a condition suitable for ready movements to a point of use (70:535).

Principles of War. Those interdependent principles or axioms considered fundamental for carrying on successful war. These principles are variously stated (as by Clausewitz, Sun Tzu, Douhet, and others), but they usually embrace the following: objective, offensive, surprise, mass or concentration, economy of force, security, movement or mobility, cooperation, and simplicity (123:403).

Propaganda. The dissemination of selected facts, falsehoods, doctrines, or ideas to influence the thoughts and actions of a person or group of persons (123:406).

R-Day. Redeployment reference day (74:A1-1-1-9).

Redeployment. The transfer of a force from one desired area of operation to another for the purpose of further employment, or returned to the home station (60:305).

Reinforcement. The augmentation of forward-based forces with CONUS-based forces, or the insertion of CONUS-based forces to areas where forward basing does not exist. To strengthen a military force, installation, or the like by the addition of personnel or equipment (123:434).

Shortfall. Any deficit existing between planned personnel and/or materiel and available resources which may degrade (but not preclude) a unit's capability to perform its primary mission (70:628;74:A1-1-1-9).

Short Ton. The weight of 2,000 pounds (123:469).

Sortie. The operational flight of a single aircraft from take-off until landing. A sortie begins when an aircraft becomes airborne and terminates within five minutes after the aircraft touches down (60:337;70:634).

Spares. Those bits and pieces or components, completely interchangeable with those installed, which are used to replace items removed during maintenance and overhaul. Spares may be reparable or disposable, and must be in sufficient quantities to provide a sustained maintenance capability for

60 calendar days. Examples include fan belts, circuit cards, and fuel pumps (78:65).

Standard Air Munitions Package (STAMP). A logistics entity consisting of a prescribed quantity of conventional munitions, drawn from WRM assets stored in the CONUS or Alaska. It is designed as an air transportable package for initial support of a particular weapons system, or systems, for a specified period under combat operating conditions or contingency operations (67:72;78:65).

Standard Mobility Equipment. Organizational equipment authorized during peacetime that, on deployment, goes with the unit to support its planned wartime or contingency mission. Mobility equipment is not War Reserve Materiel (78:64).

Standard Tank, Rack, Adapter, and Pylon Package (STRAPP). A logistics entity consisting of prescribed quantities of external fuel tanks and expendable suspension hardware such as racks, adapters and pylons, stored in CONUS or Alaska. It is designed as an air transportable package to support a particular tactical fighter and/or reconnaissance weapons system, or systems, for a specified period under combat operating conditions (78:65).

Standby Base (SB). An austere base, designated for wartime use, having adequate airfield facilities to accept deployed aircraft. SBs will be maintained in a caretaker status until augmented. At that time the SB will be capable of receiving and employing assigned aircraft. To initiate and

sustain operations, all supporting personnel, supplies, and equipment must be provided. POL and munitions may be prepositioned in a state of readiness for use by the deploying forces (67:72;74:A1-1-1-10;123:488).

Station Set. Prepositioned WRM designed to support wartime operations under austere conditions. Station Sets may be prepositioned at overseas bases to supplement materiel assets at existing operating bases; at bases possessing minimum facilities to which a unit may disperse for operations during an emergency or actual combat; at rotational bases; or a standby foreign base (70:654).

Stockpile. Quantities of materials stored and maintained for use in times of emergency (70:658;123:492).

Storing Command. The MAJCOM with authority over a base or facility that is responsible for providing WRM for USAF forces. If the base is not under the authority of a MAJCOM, the storing command is the host activity or command that is assigned area logistics responsibility in the USAF War and Mobilization Plan (78:65).

Strategic Airlift. That airlift which may be applied to effect a strategic advantage. It is characterized by the continuous or sustained air movement of units, personnel, and logistic support between the CONUS and overseas areas, and between area commands. Strategic airlift resources possess a capability to airland or airdrop troops, supplies/equipment for augmentation of tactical forces when required (67:72).

Strategic Forces. Military forces organized and equipped to carry out strategic military operations (123:493).

Strategic Mobility. The capability to deploy and sustain military forces worldwide in support of national strategy (60:350;70:662).

Strategic Operations. Operations that contribute to strategic warfare. Typically aimed at the enemy's military, industrial, political, and economic systems, or at mass undermining of morale (123:493).

Strategy. The art and science of developing and using political, economic, psychological, and military forces as necessary during peace and war to afford the maximum support to policies in order to increase the probabilities and favorable consequences of victory, and to lessen the chances of defeat (60:351;210:423).

Tactical Airlift. The airlift that provides the immediate and responsive air movement and delivery of combat troops and supplies directly into objective areas through air landing, extraction, airdrop, or other delivery techniques. The air logistics support of all theater forces, including those engaged in combat operations, to meet specific theater objectives and requirements. The means by which personnel, supplies, and equipment are delivered by air on a sustained, selective, or emergency basis to dispersed sites at any level of conflict throughout a wide spectrum of climate, terrain, and conditions of combat (67:75;70:688;123:507).

Tactical Forces. Forces charged especially with carrying out tactical operations. In the USAF, it may be a component of the Tactical Air Command, or of a theater air organization. Its components normally include fighter-bomber units and troop carrier groups (123:507).

Tactical Operations. Operations in which surface forces and air forces closely cooperate to achieve a military objective (123:507).

Tactics. The ordered arrangement and maneuver of units in relation to each other and/or to the enemy to utilize their full potentialities in combat (60:363;70:688).

United Nations (UN). A world-wide organization of nations, the member nations being pledged to maintain international peace and security and to cooperate in establishing and maintaining political, economic, and social conditions favorable to such peace and security. The UN charter was signed in San Francisco on 26 June 1945 and became effective on 24 October 1945 (123:545).

Using Command. The MAJCOM responsible for the wartime operational control of the forces for which WRM is authorized. For the purposes of NATO PPP, the deploying MAJCOM is the "using" MAJCOM (78:66).

V Day. Victory Day, considered to be that day when the enemy surrenders or is beaten into submission. Used as a watchword in World War II (123:552).

V-E Day. The day of Germany's surrender (8 May 1945) in World War II, the day of victory in Europe (123:553).

V-J Day. The day of Japan's surrender (14 August 1945) in World War II, the day of victory in Asia. The formal surrender on the USS Missouri was 2 September 1945 (123:558).

War. Open armed conflict between or among sovereign states or belligerent powers, especially armed conflict recognized by formal declaration (123:561).

War and Mobilization Plan (WMP). Provides the Air Staff and Air Force commanders with a single source for current policies, doctrine, concepts, and direction to conduct and support wartime operations. It is the primary directive for identifying which types of forces will be authorized WRM in conjunction with wartime taskings (75:A1-1-1-24).

War Consumables Distribution Objective (WCDO). A classified document authorized by AFR 67-44 for publication and distribution by HQ AFLC to reflect the prestocking, prepositioning, and planning objectives for equipment and supplies at bases and depots world-wide necessary to support the wartime activities projected in the USAF WMP (70:737).

War Consumable Supplies. Selected expendable types of war reserve materiel directly related and necessary to a weapons system or combat activity in support of wartime missions. Examples include auxiliary fuel tanks, pylons, ammunition, rockets, rocket launchers, dropsondes, chaff, POL, deicing fluid, alcohol, oxygen, and emulsive oil (78:66).

War Plans Additive Requirements Report (WPARR). Source document, prepared by the using MAJCOMs, to provide data on additive requirements, such as station sets (i.e., direct weapons system support equipment items), to the storing commands (78:66).

War Readiness Spares Kits (WRSK). An air transportable package of USAF WRM spares, repair parts, and related maintenance supplies required to support the planned wartime or contingency operations of a weapon or support system for a specified period of time pending resupply. WRSK, normally prepositioned with the using unit, will include spares and repair parts for aircraft, vehicles, communication systems, and other equipment, as appropriate. WRSK may be divided into sub-packages for individual aircraft or equipment end items, placed in mobility kit bins, stored in bulk at recovery sites, or stored in segregated base warehousing bins (78:67).

War Reserve Materiel (WRM). That USAF materiel required, in addition to mobility equipment and peacetime operating stocks, to support the planned wartime activities reflected in the USAF WMP until the industrial base has generated sufficient deliveries to equal planned wartime consumption (67:83;78:66).

Wartime Additive Support Packages (WASP). Spares packages authorized by individual MAJCOMs to support USAF WRM equipment packages where WRSK/BLSS support is inappropriate. Such packages include NATO PPP, fuels mobility support

equipment packages, WRM vehicle sets, WPARR equipment items at employment locations, and prepositioned comm-elec battle damage restoral spares/cable at employment locations. The remove and replace (RR) maintenance concept for 60 calendar days support should be used as a planning factor for supporting housekeeping or station sets, Rapid Runway Repair sets, and vehicles (78:66).

Wartime Aircraft Activity (WAA). Identifies the aircraft weapon systems by mission, design and series, location, planned sortie rates, and daily sortie durations. Serves as the source document for several WRM authorization documents: WCDO, authorizing consumables for aircraft support based on the flying activities listed in the WAA; WPARR, source document for direct weapon system support equipment; FLAS, authorizing POL for all flying activities listed in the WAA; and WRSK/BLSS Authorization Letter (78:66).

Weapons System. An instrument of combat, either offensive or defensive, used to destroy, injure, defeat, or threaten the enemy. It consists of a total entity of an instrument of combat. Examples include a F-16 aircraft, a Trident-class submarine, a destroyer, a M60-1A tank, or a Patriot missile (70:741;123:564).

World War. A general war involving nations all over the world (123:573).

World War I (WWI). (28 July 1914 - 11 November 1918). A war between the Central Powers and the Allies. The Central Powers consisted of Germany, Austria-Hungary, Turkey, and Bulgaria. The Allies consisted of the British Commonwealth, France, Russia, Italy, Japan, Rumania, Serbia, Belgium, Greece, Portugal, Montenegro, and the US. The US entered WWI on 6 April 1917 (123:573).

World War II (WWII). (1 September 1939 - 2 September 1945). A war between Japan and the Axis powers and the Allies. The Axis Powers consisted of Germany, Italy, Rumania, Bulgaria, Hungary, Finland, and Siam. The Allies consisted of 46 nations. Chief among them were the United Kingdom, France, the USSR, China, India, Poland, Turkey, Canada, Australia, Belgium, Greece, Norway, the Netherlands, Yugoslavia, and the US. The US entered WWII on 8 December 1941 (123:573).

Zulu (Z). Coordinated universal time (the mean solar time of the meridian of Greenwich, England used as the primary basis of standard time throughout the world). Normally expressed 0001 through 2400 (60:160;70:749).

Summary

Drawing from historical trends and experiences, this study examines in detail the alternatives for storage of critical prepositioned USAF WRM stockpiles. Prepositioning represents one major leg of the mobility triad (airlift, sealift, and prepositioning), and offers a feasible solution to severe, historical transport shortfalls.

The need for new thinking about the strategic placement of critical war reserve materiel stockpiles is greater now than during the Cold War when US problems and optional responses fit into familiar molds. The Soviet empire has started to break up. Important new power centers sprouting on the Eurasian land mass and along its rim already complicate security equations and are gaining strength. Thirteen Third World countries currently deploy chemical weapons. Two of them already possess nuclear weapons. Nine boast ballistic missile delivery systems. Several potentially hostile nations and subnational groups possess sophisticated conventional arms. Population explosions in a number of less developed countries, coupled with great gaps between the "haves" and "have nots," appear conducive to several forms of low intensity conflict (05:5-22;108).

This study identifies relevant issues, poses questions, and offers options to clarify choices. Coverage of the extensive scope is quite selective to conserve time and space. Each reader is urged to revise the list and pursue topics further as deemed necessary, with US defense decision-makers as intended benefactors. The following chapter presents the methodology used to achieve the research objectives.

References Cited in Chapter One

(Numbers refer to Citations and Master Bibliographical Listing)

59. Department of Defense. A Pocket Guide to NATO. DOD PG-30A. Washington DC: Office of Secretary of Defense, August 1987.
60. Department of Defense. Dictionary of Military and Associated Terms. JCS Publication 1. Washington DC: Joint Chiefs of Staff, Government Printing Office, April 1984.
67. Department of the Air Force. Air Force Glossary of Standardized Terms. AFM 11-1. Washington DC: HQ USAF, 29 September 1989.
70. Department of the Air Force. Compendium of Authenticated Systems and Logistics Terms, Definitions and Acronyms. Air Force Institute of Technology, 1981.
74. Department of the Air Force. USAF Mobility Planning. AFR 28-4. Washington DC: HQ USAF, May 1988.
75. Department of the Air Force. USAF Mobility Planning. AFR 28-4, 7th Bombardment Wing (SAC) Supplement. Carswell AFB TX: May 1990.
76. Department of the Air Force. USAF Operation Planning Process. AFR 28-3. Washington DC: HQ USAF, July 1986.
77. Department of the Air Force. War and Mobilization Plan. Volume 1, Annex S. Washington DC: HQ USAF, July 1988, p S-7.
78. Department of the Air Force. War Reserve Material (WRM) Policy. AFR 400-24. Washington DC: HQ USAF, November 1986.
85. Discriminate Deterrence. Report of the Committee on Integrated Long-Term Strategy. Washington DC: Government Printing Office, January 1988.
108. Goldrich, Robert L. and Stephen Daggett. Defense Goals of the 1990s, Issue Brief IB 90013. Washington DC: Congressional Research Service, May 22, 1990.

110. Goodwin, Roy M., Brigadier General, USAF. "Meeting Minutes of the TAF RED HORSE Steering Committee, 11 Dec 87." Correspondence. HQ TAC/DE, Langley AFB VA, 25 Jan 88.
111. Gorbachev, Mikhail. Perestroika, New Thinking For Our Country and the World. New York: Harper and Row Publishers, Inc., 1987.
123. Heflin, Woodford Agee, editor. The United States Air Force Dictionary. Washington DC: Air University Press, 1956.
148. Knight, Clayton. "The Story of the US Military Air Transport Service," Lifeline in the Sky. New York: William and Morrow Company, 1957.
190. Moses, Glenn E., Major, USAF. Strategic Mobility, Introduction. Research Project, Air Command and Staff College (AU), Maxwell AFB AL, 1988.
200. Peppers, Jerome G., Jr. Military Logistics: A History of United States Military Logistics 1935-1985. Huntsville AL: Logistics Education Foundation Publishing, 1988.
210. Quick, John. Dictionary of Weapons and Military Terms. New York: McGraw Hill Publishers, 1973.

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II. Methodology

Chapter Overview

The purpose of this study is to present several options for the future strategic placement of critical USAF WRM stockpiles, given the recent "epidemic of democracy" racing throughout the world today. This chapter describes the steps taken to answer the research question provided in chapter one. The following discussion presents the methodology used to achieve the research objectives and to answer the five investigative questions.

Method of Treatment

This research effort, in its attempt to derive a conclusion for the research question, was essentially accomplished through an extensive review of the literature, complemented by several telephone interviews with Air Force Logistics Management Center personnel and Major Command (MAJCOM) contingency planners. The rigorous application of the historical research method guided this research.

The literature review contained student theses and reports accomplished at the Air Force Institute of Technology at Wright-Patterson AFB, Ohio, and both the Air Command and Staff College and the Air War College at Maxwell AFB, Alabama. Documentation from the US Army and US Navy was reviewed to answer investigative question three concerning the role of prepositioning in the strategic mobility triad. The Defense Logistics Agency's Defense

Technical Information Center (DTIC) searches, as well as professional periodicals and journals, Congressional studies and reports, and USAF regulations, proved invaluable to this research effort.

The historical search information documented the history and development of US military logistics, the composition of US and Soviet military doctrine, the significance of present-day, world-wide events, and the prepositioning policies of critical USAF WRM.

Organization

To fully understand the relevant issues concerning the placement of critical European WRM stockpiles, several areas of research are encompassed in this review. To begin, an historical analysis of US military logistics is provided. Then, an overview of current, world-wide events taking shape around the world, with particular emphasis given to their effects on US decision-making strategies, is accompanied by a synopsis of both US and Soviet military doctrine. This overview supports the necessity to make a reasonable and expedient decision regarding the future of the strategic mobility triad as it exists today. Considerable attention is then focused on a detailed analysis of USAF WRM and an evaluation of several options concerning the future of WRM prepositioning. Finally, this effort will conclude with a discussion of the positioning of this literature within the model presented.

The research objectives of Chapter I provide the structure for the literature review. The assumptions stated in Chapter I serve to guide the analysis of the research problem. An explanation of key terminology is also provided in Chapter I, else the reader is deprived the basic underpinnings of a thorough indoctrination of the policies affecting USAF WRM. Chapter I closes with a reminder that researchers are faced with a finite world before them--limitations must be imposed in an effort to streamline the research into a definable pattern of thought thereby allowing others the opportunity to build upon humble beginnings. The research for this effort is no exception.

Chapter III furnishes the reader, through a review of the past 50 years of US military logistics history, "some of the problems faced by the military logisticians and the solutions they derive in their efforts to succeed in supporting the combat forces so they might achieve the sought-after victory" (200:ii).

Current US military doctrine is summarized in Chapter IV. Military doctrine is the footstool of current military policies and procedures--all that is good and bad for logisticians is founded upon doctrine. US doctrine is defined as "those fundamental principles by which the military forces guide their actions in support of US national objectives" (60:119). This chapter briefly outlines and summarizes the progression of American

aerospace doctrine over the past 85 years, culminating in America's overwhelming AirLand Battle execution in Operation Desert Storm.

Current Soviet military doctrine is summarized in Chapter V. Soviet military doctrine is defined as "the military policy of the Communist Party" (222:x). The historical analysis of Soviet doctrine begins in the early days of the Soviet state when the concept of a military doctrine was first formulated--just after the 1917 October Revolution. Its development is then traced "through the noisy debates of the 1920s and through the long silence of the Stalin years to its reemergence in 1960" (222:xi). A cursory look will then be given to Soviet military doctrine as it passes through the regimes of Khrushchev, Brezhnev, Andropov, and Chernenko. Finally, a closer examination will be afforded to the Soviet military doctrine of the present--especially noteworthy are the effects of perestroika as undertaken by General Secretary Mikhail Gorbachev.

Chapter VI sets the stage for a dramatic evolution of democratic reforms throughout the world--reforms that prelude the necessity for America to redefine current military doctrine. America must now transition from an almost exclusive concentration on the USSR and NATO countries to a position more capable of influencing politico-military outcomes in the Third World areas.

Chapter VII asserts the importance of the strategic mobility triad (airlift, sealift, and prepositioning) and offers current perceptions of each of the major DOD strategic mobility programs. Strategic mobility is essential to America's military effectiveness. Moreover, it is crucial for the continuous protection of national interests throughout the free world.

Chapter VIII proceeds with a detailed analysis of WRM and an evaluation of several options concerning the future disposition of WRM prepositioning. Prepositioning represents one major leg of the strategic mobility triad and offers an alternative to the expensive and politically fragile forward basing strategy of earlier decades. The chapter discusses the historical importance of WRM prepositioning to the US defense policy, the execution of WRM prepositioning within the United States Air Force, and its ties to forward deployment and reinforcement strategies.

Finally, Chapter IX concludes this study with an attempt to offer timely insight into the research and investigative questions thereby allowing readers to derive their own educated hypothesis and conclusion.

Summary

This chapter reviewed the method used to solve the research objective and presented an overview of the literature studied. The historical research method was the only applicable design for the research objectives.

References Cited in Chapter Two

(Numbers refer to Citations and Master Bibliography Listing)

60. Department of Defense. Dictionary of Military and Associated Terms. JCS Publication 1. Washington DC: Joint Chiefs of Staff, Government Printing Office, April 1984.
200. Peppers, Jerome G., Jr. Military Logistics: A History of United States Military Logistics 1935-1985. Huntsville AL: Logistics Education Foundation Publishing, 1988.
222. Scott, Harriet F. and William F. Scott. Soviet Military Doctrine: Continuity, Formulation, and Dissemination. Boulder CO: Westview Press, 1988.

III. History of US Military Logistics

Chapter Overview

The research objectives of Chapter I provide the structure for the literature review. The methodology outlined in Chapter II provides the method of problem solution. This chapter elaborates on the history of military logistics as an element of military affairs not yet mastered. Indeed, General Dwight D. Eisenhower reminded the world that "battles, campaigns, and even wars have been won or lost primarily because of logistics" (220:33).

For the purpose of this research, although many definitions and arguments exist, military logistics will be defined as "that system established to create and sustain military capability" (200:v). Because of the types of problems encountered by today's military leaders, a look into the history of military logistics can prove quite beneficial. General Douglas MacArthur had this to say about the appropriateness of an in-depth historical analysis:

More than most professions, the military is forced to depend on intelligent interpretation of the past for signposts charting the future....The facts derived from historical analysis, [the soldier] applies to conditions of the present and the proximate future, thus developing synthesis of appropriate method, organization and doctrine. (220:1)

The past fifty years offers much insight into the ability, or the lack thereof, of the United States Armed Forces to learn from past mistakes. A brief synopsis follows.

World War II

The demobilization effort after World War I was extensive and, by the 1930s, many Americans, including the President and the Congress, believed war was unlikely for the US. The country's defense posture slid into serious jeopardy. During the 1930s, prior to World War II, the structure of the military was small, training and training materials were inadequate, and proper funding was out of the question. Why? World War I, the war that "made the world safe for democracy" (115:146;164:281;200:1), had been fought and won (See Appendix A).

Because the US (the Allies) fought to make the world safe for democracy, then certainly many believed the US must now be safe. After all, given transoceanic capability of that period, the Atlantic required seven days journey while the Pacific required as much as 21 days to safely cross. No aerial threat existed. The first solo transoceanic flight was not to occur until 1927. Neighboring Canada posed no threat to the US (although Canada was considered an enemy in the war of 1812). Since the battle for the Alamo, while Texas was a budding nation, Mexico posed no real threat to the US. The mind-set in America became one of isolationism. Secure between two broad oceans (the Atlantic and the Pacific), comfortably situated on a huge continent rich in open space and seemingly unlimited resources, and relatively free from any external threat, the United States turned its

attention to internal development. Americans in the 1920s enjoyed the good life--riding a roller coaster of sorts through a decade of booms and busts. In October 1929, the Great Depression wreaked havoc throughout the world. For 10 years world economies progressively worsened--US citizens were particularly affected. Hundreds of thousands of businesses closed putting multitudes of people out of work. The unemployment rate soared, sometimes reaching as high as 65-80% in some major cities. For example, at the height of the depression, Cincinnati Ohio estimated its unemployment rate at 65% while neighboring Toledo reached an astounding 80% unemployment (199). Retaining strong convictions towards isolationism continued through the 1930s. Some of the US male populace became nomadic, riding the rail system or hitching rides from passing vehicles to "prosperous" towns. In an effort to support their families, these men would build "refugee camps" at rail marshalling yards, at major highway intersections, and under bridge overpasses. Faced with the loss of so many businesses, a poor economy, and an isolationist mind-set, Congress continued to vote for reduced military budgets and decreases in military manpower. America allowed its armed forces to decline. Weapons for training purposes were nonexistent. When weapons could be found, no ammunition was available for live firing. Men training in the US Armed Forces in 1940-41 typically had no uniforms. Broomsticks replaced rifles, telephone poles

replaced artillery pieces and cannons, and trucks replaced tanks. Speaking of tanks, between 1918-1939, only 35 tanks were produced, most of which were one-of-a-kind (199:65). Furthermore, Congress refused to allow the US to actively participate in the League of Nations--a vision originating in the mind of President Woodrow Wilson.

Surprises. Challenges to isolationist convictions were on the horizon. It took Italy's invasion of Ethiopia and alignment with Germany, the subsequent German invasion of France, and the surrender of France to Germany in the Compiègne Forest between 10-21 June 1940 to persuade the White House to seriously consider the posture of American military strength. Germany's "blitzkrieg" (mobile war) had proven its uncommon proficiencies in the air, on the land, and on the seas. By that time, most of Europe was under Germany's control. Japan, in the 1930s, was also on the rampage in the Pacific basin and Asia. Japan, through a mutual agreement with the government of China, was to "protect" Japanese businesses along the Manchurian Railway. Young Japanese officers, with their eyes on the spoils of China, felt Japan deserved a better place in the world. Because Japan was in urgent need of more space and more resources, little opposition was levied by the official Japanese government--Manchuria soon fell under the control of Tokyo.

World War II was active in Europe and Japan was belligerent in Asia. Nevertheless, the attack on Pearl Harbor by the Japanese on 7 December 1941--the impetus of US involvement in World War II--came as a surprise. Isolationism was deeply rooted, military budgets were low, party politics were high, and planning and preparation for US involvement was inadequate. Americans simply were not ready! The next day President Roosevelt went to Capitol Hill (Washington DC) and addressed a joint session of Congress. The President spoke with deep emotion these words which resolved the great debate on US participation in World War II (See Appendix B):

Yesterday, December 7, 1941--a date which will live in infamy--the United States of America was suddenly and deliberately attacked by naval and air forces of the Empire of Japan. . . .With confidence in our armed forces--with the unbounding determination of our people--we will gain the inevitable triumph--so help us God.

I ask that the Congress declare that since the unprovoked and dastardly attack by Japan on Sunday, December 7, 1941, a state of war has existed between the United States and the Japanese Empire. (218:27-29)

Logistics Planning. Although turmoil erupted continuously throughout the world and skirmishes abounded between neighboring countries, the US did little more than to say "You shouldn't be doing this or that." For example, no embargoes were placed against Italy after its invasion of Ethiopia, Japan after its invasion of Manchuria, or Germany after its invasion of Czechoslovakia and Poland. In fact, the US continued to export petroleum products, steel, and

agricultural goods, among other exports, to these countries subsequent to their aggressive acts.

Other countries, particularly those in fear of similar aggression, requested and received US support. With help from an upswing economy, due in large part to the passage of the Lend-Lease Act on 8 March 1941, America immediately began rebuilding its military strengths. This act stated that the President might "...sell, transfer title to, exchange, lease, lend, or otherwise dispose of any defense article to any country whose defense the president deemed vital to the defense of the [US]" (135:443).

TABLE 1

Lend-Lease Aid to Allied Nations

<u>Nation:</u>	<u>Aid (in billions)</u>
Great Britain empire	\$31.6
(included Canada, New Zealand, and Australia)	
Union of Soviet Socialist Republics	11.0
France	3.3
China	1.6
Others	.5
<u>Commodity:</u>	
Aircraft Parts	\$8.2
Combat Vehicles/Parts	3.9
Trucks/Parts	2.5
Weapons/Parts	3.0
Ammunition	1.5
Non-military Aid	28.9
(included clothing, chemicals, ships, tools, and food)	
<u>Source: (199)</u>	

The Lend-Lease Act, devised to overcome the Neutrality Acts of the 1930s and the subsequent Cash and Carry amendments which followed, was a measure to aid US Allies. The US ultimately became the "arsenal of democracy" (218) (see Appendix C) supplying the free world in all of its battles against the Axis powers of Europe and the Japanese forces in the Pacific (refer to Table 1). Much good came of Lend-Lease participation. To begin, all products were built to US specifications and standards. Although the US was not actively involved from onset of the war, this measure later ensured total inter-operability thereby reducing the complexity of non-standard logistics requirements (for example, metric versus standard measurements). With US participation in the war, the prior shipments of Lend-Lease goods also served to overcome potential lead times--the US had only to increase production, not initiate production. Finally, under Reverse Lend-Lease, an exchange capability existed between the US and its Allies. The US could accept help from its Allies without payment.

Manpower and Equipment. Logisticians soon became obsessed; only one thing was on their minds. Do what had to be done to get the right things in the right quantity to the right place at the right time in the right condition. Quite a formidable task considering the complexity of a multi-theater war. World War II records indicate that 67 pounds of supplies were needed for every man every day.

(For a 12 million man American force, that equates to more than 400,000 tons of supplies to be moved daily to supply only US forces. Additional needs existed for the Allies.) To further complicate matters, those 12 million Americans were spread throughout 11 active fronts (See Table 2).

Table 2
Military Manpower in World War II

	US Army	US Navy	US Marines	Total
1939	189,839	125,202	19,432	334,473
1941	1,462,315	284,427	54,359	1,801,101
1945	8,267,958	3,380,817	474,680	12,123,455

Source: (200:54)

Certainly, the ingenuity and "selfless devotion of thousands of officers and men in the service organizations accomplished gigantic logistics achievements" in light of poor advanced planning and foresight (166:159).

Lessons Learned. Under the direction of President Roosevelt, an industrial revolution of sorts led to a boom in America's economy and, after time, produced an adequate amount of military equipment in support of the war effort. World War II was a war of "mechanized mass" (199). Annual production rates exceeded 50,000 aircraft, 20,000 tanks, 80,000 artillery pieces, and 500,000 wheeled vehicles during the war (252:2). By war's end, the US inventory consisted of approximately 88,000 tanks, 2.5 million wheeled vehicles,

300,000 aircraft, and 6,000 ships (199). Problems with the standardization of production arose, but just over the horizon loomed a much larger problem--manpower (too much in the wrong place at the wrong time). Conscription drained the country of the majority of the prime male population, sending those conscripted to military service. Many, many men were ordered overseas before adequate equipment was in place for their subsequent usage. Not enough trained men were left behind in this country to continue smooth industrial-based operations. Poor planning almost proved disastrous as the need for logistics planners, and their proper involvement in military planning, was not generally recognized. Logisticians were merely expected to do whatever it was "operational" planners expected them to do (11). Another lesson to be learned. But, was it learned?

General MacArthur's stature and the US Navy's suspicions of him led to a division of responsibility in the Pacific Theater rather than a single unified command structure (232:144-146). In his Southwest Pacific Command, MacArthur surrounded himself with a staff of trust-worthies known as the "Bataan Gang" and kept his theater headquarters far from the front (232:146). MacArthur's first air commander, Lieutenant General George Brett, was ineffective, at best, and relieved. His replacement, Major General George Kenney, successfully integrated airpower into the campaign. With forcefulness and exceptional abilities,

General Kenney was trusted by MacArthur to run the air campaign as he saw fit (232:226-227). It is General Kenney who deserves much of the credit for MacArthur's successful air campaign during the war. The Korean War, as shall later be pointed out, highlighted the basic flaws of MacArthur's command structure.

The magnitude of World War II was such that a tremendous impact was continually placed upon the world of logistics. Forty-five militarily active countries participated (34 Allied, 11 Axis). Distribution networks were paramount to success. Spares, repair parts, food, ammunition, and medicines, among a multitude of other goods, required transportation to and from each front. The means of transportation, in turn, required its own cadre of logistics support--spares, POL, manpower, training, etcetera. Casualties were high--55 million people were killed world-wide. Of those, 39 million were civilians. Twenty million casualties were experienced by the Soviet Union. Graves registration, burials and, in many cases, transport of US fatalities back to the US placed a tremendous strain on an already burdened logistics system. Military wounded in all countries totaled more than 25 million. Hospitals had to be built, staffed, and maintained. Supplies and equipment required continual replenishment. New recruits replaced those wounded or killed in actions. Each required training, clothing,

weaponry, and transport to their assignment. More than \$1.5 trillion (\$13.5 trillion in 1988 US dollars) was attributable to war costs. Reconstruction costs were not considered in this cost.

Demobilization created more problems. "Mom-ism"--a phenomenon of unrelenting political pressure requiring the immediate release of troops for return to moms, wives, sisters, and girlfriends back at home in the US--created havoc. Air and sea transport became a major hindrance. As a result, the return of service personnel became a priority mission for 550 ships (200:145). Because the military was demobilized as individuals rather than as units, a disintegration of units, as masses of men departed, led to an almost overnight collapse of mission capability. Experienced troops were allowed, by virtue of a point system, to participate in the mass exodus first. Each person in uniform was entitled to a point summation, known as the Adjusted Service Rating, based on a number of factors including time in service, time overseas, combat service, and parenthood (200:145). Those with the highest points, namely the most experienced, were theoretically scheduled to return home first. Hence, very little capability remained. No one was left to perform maintenance tasks or to prepare and ship supplies and equipment back to the US. In many instances, because units were conscripted together, whole units would pack up and depart at the same time. What few

personnel were left behind were inexperienced--they did not know what to do. Within a period of 12 months, in effect, the military fell from 12 million servicemen and women to less than three million personnel (130:35;231).

Korean War

A lot of these same kinds of things can and should be said about subsequent confrontations. The Korean War was littered with problems similar to those experienced in World War II. Again, Americans were not ready for war, especially in the Pacific. The North Korean People's Army (NKPA) invasion of the Republic of Korea (ROK) on 25 June 1950 found the United States military in a deplorable condition with little conventional capability (19:29). The newly

established USAF had spent its limited budget on strategic nuclear systems and neglected the tactical forces which had been so decisive in World War II. The DOD had no logistics

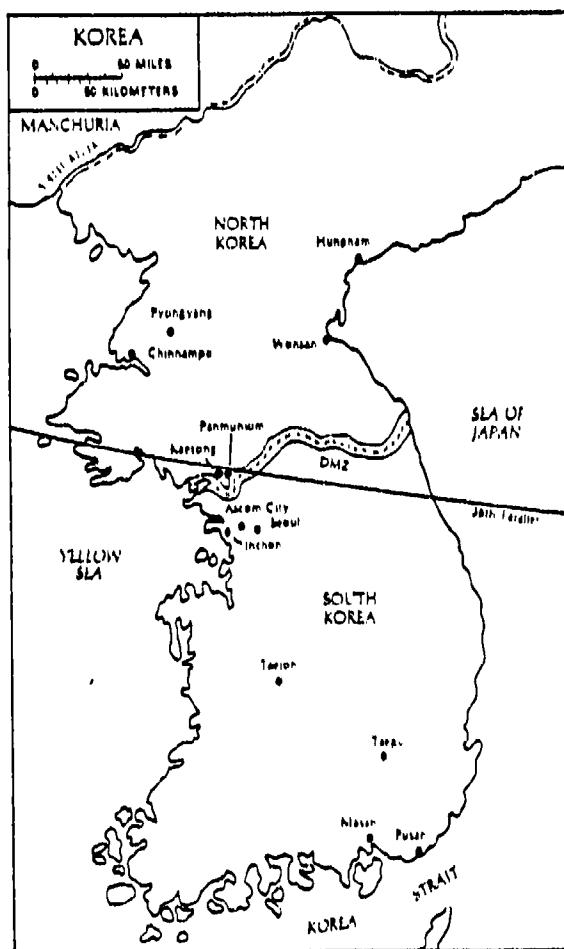


FIGURE 1: Korea (113:2)

planning nor a logistics staff in the Pacific. No deployable logistics force/system (such as prepositioned materiel) existed in the Pacific. The in-country infrastructure was virtually non-existent. Manpower forces were hurriedly built up for immediate deployment but adequate and proper in-theater equipment for their use was neglected.

Surprises. The end of World War II brought a massive and hasty demobilization. The Korean peninsula was controlled by the Japanese before US entry into WWII. During WWII, the Korean people made it clear their choice was freedom and independence. The Korean request for such independence was officially recognized by the US, Great Britain, and China. At the end of WWII, the Japanese south of the 38th parallel were to surrender to the US commander, and those north of the 38th parallel to the Soviet commander. No formal agreement existed between the US and the Soviet Union to divide Korea. It was merely a measure designed to facilitate the Japanese surrender. Over time, however, two separate countries developed. In May 1948, the Soviet Union refused to allow the North Koreans (those North of the 38th parallel) to participate in UN-encouraged free elections. In July 1948, a constitution was drawn up for the Republic of Korea (South Korea) and Dr. Syngman Rhee was elected the Republic's first president (200:173). With the emergence of the Korean government, a US military government was no longer required. In 1948, the Soviet Union began to

"press" for identification papers to cross an otherwise "free" border. Furthermore, the Soviet Union continued to "educate" the North Koreans in the communist way of life, culminating in the socialist-oriented People's Democratic Republic of Korea. As early as August 1949, the United Nations (UN) attempted to recognize the Republic as the legitimate government of Korea and as a free, independent country and member of the UN. However, both Korea's membership in the UN and its official recognition as a free and independent nation were vetoed by the Soviet Union. The South Koreans were assisted with US defensive equipment, while the North Koreans developed a large, well equipped, well trained military force capable of both offensive and defensive operations. It was not long before North Korea began to harass its southern neighbor. Roads were blocked, electricity from the industrialized North was cut-off from the predominantly agricultural-based South, villages were raided, and incidents involving armed firing across the border were fabricated. Propaganda abounded in North Korea. The South Koreans believed the North Koreans enjoyed high employment, bountiful food, and high living standards while those in South Korea suffered needlessly the anguish their life had to offer. In fact, the North Koreans did "enjoy" very high employment--they were "forced" to work.

On 25 June 1950, North Korea, instead of harassing with platoon-sized forces, actually invaded South Korea. The

Soviet Union was convinced any reaction to the invasion would culminate in "a slap across the wrist," much the same as applied to pre-World War II invasions by Italy, Germany, and Japan. The last thing expected was a United Nations Security Council resolution condemning the invasion coupled with committed US and Allied involvement. In a matter of days, North Korea had swept over much of South Korea. Within a month, the NKPA drove the UN forces to a small perimeter around the port of Pusan. Despite the poor condition of those forces, airpower seemingly made the difference preventing disaster and complete defeat during the initial NKPA invasion. Lieutenant General Walton Walker, commander of the Eighth US Army in Korea at the onset of the war, stated, "If it had not been for the air support we received from the Fifth Air Force, we should not have been able to stay in Korea" (213:384-395). While the USAF was a major factor in helping to ensure South Korea's independence, numerous errors were committed by US forces resulting, at times, in the ineffective application of military capability.

Logistics Planning. The US entry into the Korean War on 26 June 1950 was very similar to its entry into WWII. As for operational logistics planning--how to get supplies and equipment, once produced, from the US to the troops in the theater--the failure of war planners to foresee the possibility of a North Korean invasion of South Korea meant

there was no war plan to form a basis for logistical planners. Hence, no logistics planning was in place for the Pacific. Furthermore, no logistics staff existed in the Pacific Command. Nor was a ready, deployable logistics force or system available. Again, the US was not ready for war. In an attempt to assist a friend in need, manpower was immediately deployed, neglecting the requirement for the simultaneous arrival of equipment. What awaited arriving troops was, at best, a poor in-country infrastructure. South Korea was an agriculturally-oriented nation--no requirement existed for an extensive infrastructure.

Neither the Far East Command nor the Department of the Army "appeared to have any prepared plan for support of military operations in Korea" (133:22). An off-the-cuff decision to go into Korea was supported by a spontaneous UN recommendation "without reference to logistical plans and analysis" (133:22). Detailed planning was immediately initiated, arguably a little late under the circumstances. Although it may be impractical, if not totally impossible, to plan for every possible contingency, there is perhaps some "advantage to be won in the very process of planning even if the plans themselves have to be 'thrown out the window' when the emergency comes" (133:22).

The US was fortunate in that Japan had rapidly rebuilt its societal and industrial framework in the five years since World War II. Facilities, such as shipyards,

drydocks, and air bases, had been rebuilt. Productivity was on the rise. The devotion of an inexhaustive labor source to work was astounding. Spare parts and equipment, including WWII landing ships, were made available to the US. Japan's hospitals cared for sick and wounded US soldiers. Japan's neighbor, Taiwan, also assisted with its industrial strength. The US was also fortunate in that the North Koreans possessed no credible naval forces, making it easier for the US to use Japan's assets more freely.

Infrastructure. In the agriculturally-oriented South Korea, an in-country infrastructure was virtually nonexistent. There simply was no requirement for such an elaborate system. Had one existed, it may have proven invaluable the first 12-18 months. Fluidity and mobility became the name of the game. In the first year especially, the war was marked with lots of movement. As a result, logistics support had to become mobile. Combat logistics became a reality. Without logistics support in the immediate vicinity of combat, battles could not be fought and won. It was impractical, indeed impossible, to create, under such circumstances, large depots. Combat support, by necessity, had to be delivered to the front lines, wherever they might be from day to day. As the war continued, more and more emphasis was given to support personnel in logistics (i.e., finance, supply, transportation, graves registration, etcetera). It was not long before the number

of support personnel outnumbered combat forces by a ratio of 5 to 3 (199). In turn, another logistics problem was created--how to logistically support logistics forces. Here, initiative (make-do measures) played a key role. Due to the mobility of war, improvisation depended on imagination. Imagination, in turn, depended on experience. A lot of "left-over" World War II experience and knowledge was available. It did not take long, for example, until helicopters became indispensable for transporting supplies and evacuating wounded across treacherous mountain country and otherwise inaccessible battle positions.

As for Korea's accessibility, only one major railway and one major highway existed prior to the invasion. The industrial capability was concentrated north of the 38th parallel. Ports, equipped for no more than one or two ships at a time, were minimally adequate. No communications system existed. Transportation of supplies and equipment to most of the units, even in the best of circumstances, was often relegated in small doses to Korea's only indigenous source of support--the backs of human laborers.

Manpower and Equipment. Troop strength and readiness were two large problems that faced America's military forces when the surprise invasion of South Korea demanded action in the summer of 1950. US Army worldwide assigned strength, as of 26 June 1950, was 630,201, of whom 360,063 were in the CONUS (113:25). Of the remainder, 108,550 were in

MacArthur's Far East Command (nearly 10,000 below authorized strength) and 80,018 in Europe (113:25). The rest were scattered about the globe. Unsurprisingly, General MacArthur's Far East Command was "in the worst condition that it had been in since the end of World War II" (143:164-165). As if that was not enough, many of the units were comprised largely of young, inexperienced soldiers, armed, if at all, with police-type weapons (113:25). As conditions worsened on the battlefield, General MacArthur quickly scrapped his first estimates for two divisions, instead asking for "a field army of four divisions, one airborne regimental combat team, one armored group of three medium tank battalions, and numerous artillery and support units" (113:26).

Logisticians had their problems also. The total tonnage of equipment and supplies shipped in support of the Korean War totalled 31.5 million tons (133:18). Supplies on-hand at the beginning of the war were sufficient only to sustain troops in peacetime activities for sixty days (113:26). Virtually no supplies were in the pipeline. Equipment and supplies from deactivated units, for the most part, were unserviceable. Depot stock levels fared no better. In late June 1950, depot stock levels approached ninety days for most supplies. Critical Army supply and equipment needs, however, were met early in the war--World War II surplus stocks "saved the day" (134:46).

Lessons Learned. The US, as before in World War II, prepared no operations/logistics planning for a war in the Pacific. Subsequently, inadequate airlift was the norm--the nearest point of embarkation was Japan. Fortunately for the US, a great deal of World War II surplus could be accessed throughout the Pacific. What was not readily available was shipped in from the CONUS and other Allied nations. In fact, much reliance was afforded shipping. A reasonable Merchant Marine force was in existence as were many of the Liberty/Victory ships of WWII; however, the pipeline from the US to Korea was more than 5,000 miles.

Suffice it to say lead times were often excessive. To accentuate the problem, no ready industrial base existed in the US. More political attention was given to the economy, in particular the gross national product (GNP), than on US involvement in the Korean War. Political emphasis was also leaning heavily in favor of European changes. Much attention was given to the Soviet Union and NATO's role in collective security. For these and other reasons, Congress did not declare war, nor was a national emergency declared, thereby effectively denying the strong-willed drive typical of previous military engagements.

The Korean War also demonstrated problems encountered by the improper organization of a joint command. The Far East Command operated for more than two years without a true joint headquarters. The command structure in place at the

time was over-centralized in Tokyo, greatly hindering the coordination of joint forces and communication between forces (94:389). Although the war demonstrated the importance of air superiority in a theater of operations, a typical failure caused by this ineffective command structure was in air targeting. Instead of air targeting being performed by the Far East Air Force (FEAF), the air component command, MacArthur's "Far East Command General Headquarters (GHQ) formed the GHQ Target Group and tried to direct air operations from Tokyo" (102:45). The Target Group did a poor job of targeting "due primarily to the lack of air targeting expertise in its Army-dominated membership" (187:54). Another problem caused by the lack of a true joint HQ staff was that Navy and Marine air resources were not effectively integrated with the overall effort (102:49). Although the importance of integrating air interdiction into the theater campaign and the need to combine interdiction with ground force maneuvers was eventually demonstrated, the overall effect of a poor command structure was that the fully integrated use of joint forces was never realized against the enemy. Official USAF history notes (102:693):

The Korean War was the first conflict to test the unified military forces of the United States. Although the US Joint Chiefs of Staff had directed the Far East Command to provide itself with a joint command staff adequate to ensure that the joint commander was fully cognizant of the capabilities, limitations, and most effective utilization of all the forces under his command, the United Nations Command/Far East Command operated for the first two and one-half years of the Korean War without a joint headquarters. Practically all of the interservice

problems which arose during the Korean War could be traced to misunderstandings which, in all likelihood, would never have arisen from the deliberations of a joint staff. In the absence of the joint headquarters staff, the United Nations airpower was seldom effectively applied against hostile target systems in Korea.

Clearly, a joint commander must organize and staff a joint command structure in accordance with well-established doctrine. The failure to do so will result in inefficiency, ineffectiveness, and the failure of the commander to harness the synergistic efforts of a well-coordinated ground, air, and naval military capability.

Although limited and often restricted, land transport capability proved to be the key to the successful outcome of the Korean War. The air and sea transport capability to Korea was effective, but it was the in-theater movement of personnel, supplies, and equipment that proved most beneficial. Land transport did not always equate to vehicular movement. Human and animal transport was commonly utilized. Despite a horrible terrain, a lacking infrastructure, and a varied array of climatic conditions, land transportation in Korea "probably was the key to the entire logistical effort in support of operations there" (133:20).

Military support simply could not compete with the US civilian economy. Many Americans protested US involvement with active resistance. Ironically enough, the war became political in nature. In the end, abandoned WWII surplus saved the day. Something can be said for a suggestion that the US, in cooperation with its allies, "should stockpile

all kinds of military supplies at strategic points near areas of potential danger in various parts of the world" (133:24). Southeast Asia, it seemed, was in dire need of such strategic assets as conflict in yet another small Asian country brewed forebodingly over the horizon.

Vietnam War

Vietnam proved no different. Once again Americans were caught unaware. Although US "advisors" were in place, war was not expected. Logistics planning for the Pacific theater was inept and no deployable logistics force/system capable of sustaining combat existed. Available ports and airfields were inadequate. The in-country infrastructure was no better than that experienced in the Korean War--primitive, at best. Finally, there were no logistics troops in-country (125:6). Both the Korean War and the Vietnam War taught strategists many things, yet logistics lessons learned in the Korean War failed to be properly implemented. Because of its unsuccessful outcome, it is more important than ever to understand the lessons of US involvement in the Vietnam War and their application to

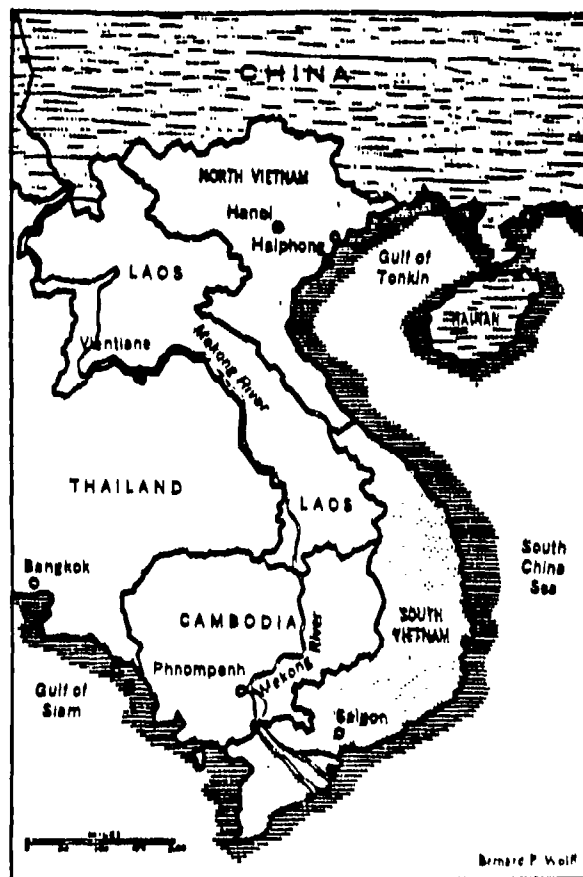


FIGURE 2: Vietnam (18:12)

today's combat readiness. The US philosopher George Santayana once said,

Progress, far from consisting in change, depends on retentiveness. When change is absolute, there remains no being to improve and no direction is set for possible improvement: and when experience is not retained, as among savages, infancy is perpetual. Those who cannot remember the past are condemned to repeat it. (221:284)

What began as a very limited effort to check communist expansion in South Vietnam ended a decade later with more than 200,000 American soldiers killed or wounded. US involvement in Vietnam began during the administration of Dwight D. Eisenhower (1953-1961). Vietnam, a former French colony, had been partitioned in 1954 into a communist-dominated regime in the north and an anti-communist regime in the south. North Vietnam, under the leadership of the skilled guerrilla fighter Ho Chi Minh, was lending military support to a group of communist insurgents in the south who were attempting to overthrow the South Vietnamese government. Under Eisenhower, several hundred military advisors were sent, along with economic aid, to strengthen the forces of anti-communism. As the insurgency began making consequential inroads, however, Eisenhower's successor, John F. Kennedy (1961-1963), decided to commit American support troops to South Vietnam. Four thousand troops were sent in 1962. Under President Lyndon B. Johnson (1963-1968), events in South Vietnam began to move swiftly. US intervention mushroomed both militarily and politically. In 1965, US air strikes were ordered against North Vietnam.

By 1965, such air strikes became part and parcel to daily activities of those stationed in Vietnam. In 1966, more than 200,000 troops were committed to Vietnam.

Surprises. Initially, most Americans backed Washington's Vietnam policy. Government reports depicted the Viet Cong (the name given the communist insurgents) as a communist guerrilla movement which employed terror and coercion to force the hapless peasantry of South Vietnam into submission. Moreover, the North Vietnamese, who were underwriting the efforts of the Viet Cong with troops and armaments, were receiving a steady supply of war materiel and monies from communist-bloc nations, especially the People's Republic of China. A dangerous situation seemed to be developing, one which the US government referred to as the "domino theory"--If South Vietnam were allowed to fall to communism, so eventually would the rest of Southeast Asia. Given these circumstances, aiding the government of South Vietnam appeared both honorable and consistent with America's best interests. But as the war dragged on and a military victory appeared more and more elusive, these arguments were rapidly becoming moot. Much weightier arguments were evolving, namely the cost in American and Vietnamese lives and in American dollars. Americans began questioning the credibility of those factors allegedly motivating their government's involvement.

The American effort in Vietnam was the best modern military science could offer. The array of sophisticated weapons used against the enemy boggles the mind. Combat units applied massive firepower with great precision using the most advanced scientific methods. Military and civilian managers employed the most advanced techniques of management science to support combat units in the field. The result was an almost unbroken series of American victories--victories that somehow became irrelevant to the war. After all, how can a nation win every battle and yet lose the war? In the end, the best military science had to offer was somehow not good enough--and thus the paradox; politics and popular impressions defined a failure.

Predictably, Vietnam became the primary focus of attention during the presidential election of 1968. In an apparent effort to induce the North Vietnamese to join the US in negotiating a settlement to the war, President Johnson announced he would not seek re-election. His vice-president, Hubert H. Humphrey, became the Democratic nominee and was defeated by Richard M. Nixon (1969-1974) who claimed to have a "secret plan" for honorably disengaging American troops. Many believe, however, that Nixon's "secret plan," which amounted to no more than a concerted effort to involve a greater number of South Vietnamese troops while simultaneously initiating a gradual American pullout, succeeded only to intensify the conflict. US participation

in the war ultimately ended in March 1973 following several years of peace negotiations. To the dismay of many Americans, the void left behind was quickly and decisively exploited by the North Vietnamese. Under Gerald Ford's administration (1974-1976), Saigon, the capital of South Vietnam, was captured by North Vietnamese forces. Ironically, the dire predictions of the "domino effect" did not materialize. Only Vietnam and two neighboring countries, Laos and Cambodia, became communist.

Logistics Planning. The general logistical effort was incredibly well done in spite of enormous difficulties. Logistics planning for a war in Southeast Asia was accomplished prior to our involvement in Vietnam. In fact, logistics requirements were identified in plans which were "published as early as 1959 and revised in 1962 and 1963" (124:76). However, "action had not been taken to alleviate all the identified logistic shortfalls prior to the execution of combat operations" (124:76). Lieutenant General Joseph Heiser, Commander of 1st Logistical Command, Vietnam, made this assessment after specifically highlighting the lack of trained logistics personnel and adequate support organizations as prescribed by the plans (124:76). The planning process did not provide for corrective action required to modify identified shortfalls. Without realistic plans, trained personnel, or organizations capable of providing combat support, the US "was unable to

efficiently and effectively insert military power into Vietnam" (84:35).

As soon as troops and supplies began to arrive in-country problems associated with logistical planning became evident. A common practice throughout the war was the "deployment of logistics support at the same rate as tactical units rather than in advance of them" (211:16). In fact, the procurement and subsequent delivery of equipment often came later than troop arrival (200:229).

Infrastructure. Essentially, Vietnam had no existing in-country infrastructure for logistics use (200:223; 220:152). Poor ports, primitive highways, inadequate airfields, unreliable communications, and non-existent transportation routes immediately confronted the troops arriving in Vietnam. In effect, "the US had to begin from square one to build a logistics system in-country along with all its necessary infrastructure elements" (200:223). Staggering problems faced logisticians. Inadequate planning for the accomplishment of logistics support was considerably apparent. Typically,

ships had to wait in harbor for two or three months for off-loading. Then, finally off-loaded, supplies overflowed in the port shore facilities and could not be moved rapidly to point of storage or need. (200:240)

The magnitude of this regular occurrence is heightened through General Heiser's account during his Vietnam tenure: "In the 1965-1966 time frame, as many as 100 ships with half

a million tons of cargo stood off the Vietnam coast with no place to unload or store their cargoes" (124:77).

Manpower and Equipment. Unwarranted hardships were imposed on logistics planners when US officials decided not to immediately call up reserve forces. For example, without adequate advanced planning regarding personnel assigned to the theater, requirements determinations became a nightmare. Procurement lead times and distribution networks were affected. Supply stockage and industrial production quotas were affected. Personnel recruitment was also affected. Table 3 reflects changes in personnel assigned to Vietnam.

TABLE 3

Total US Military Personnel in Vietnam

<u>Date</u>	<u>Total Personnel</u>
31 December 1960	900
31 December 1961	3,200
31 December 1962	11,500
31 December 1963	16,300
31 December 1964	23,300
31 December 1965	184,300
31 December 1966	425,300
31 December 1967	485,600
31 December 1968	536,100
31 December 1969	474,400
31 December 1970	335,800
9 June 1971	250,900

Source: (125:14)

Lessons Learned. Although the outcome was unexpected, the American effort in Vietnam fit well within the American tradition. Since the Civil War, the US Armed Forces have concentrated on the sciences of developing, deploying, and employing America's overwhelming resources. As a result,

the US military has not had to be exceptionally clever in terms of military art because it could engulf its opponents in a sea of personnel, weapons, munitions, and other logistics. This is the tradition inherited from Ulysses Grant, who hammered away at General Lee in northern Virginia and overpowered the Confederate forces with the vast resources of the Union Army. The American military's traditional reliance on military science rather than on military art continues today. Why is all of this a matter of concern? The problem is that American tradition no longer fits reality. It was not a lack of power, as pointed out by President Nixon, that lost the Vietnam War. Instead, it was the decay of national will attributed to the inconsistency of the political atmosphere in the United States. For example, early planning predicted a sizeable force requirement (about 500,000) in Vietnam. It was not until 1968 before sufficient military forces were available in-country. "Limited war, graduated response, and tit-for-tat ideas, in concert with effective gamesmanship, obstructed the underlying purpose of America's intervention in Vietnam" (53:75). Hence, no clear statement of purpose nor role for deployed US Armed Forces was evident. In fact, funding in FY65 was limited to only \$1.7 billion, far less than the budgeted \$11.2 billion required to sustain activity (53:75). Furthermore, multiplied draft calls were favored to calling up the Ready Reserves--forces already organized,

trained, and equipped for duty. The deployment of essential military forces, due to new recruit training, organizing, and equipping, was delayed--the war, prolonged. Unsurprisingly, casualty rates in-country steadily rose while support back at home steadily declined.

As if enough problems were not confronted on a daily basis by those in-country, other problems were frequently encountered, compounding an already deplorable situation. For instance, the enemy was afforded sanctuary in Cambodia, Laos, and its own home (North Vietnam). Enemy forces could be concentrated on US weak points at will. If hurt, the enemy could flee back into its sanctuary until healed. The enemy could fire rockets and artillery from its sanctuary with no fear of US intervention (the US could shoot back, but could not "search and destroy" the enemy). Additionally, intelligence reports clearly identified the massive build up of enemy airfields and anti-aircraft defense installations. Nevertheless, US forces were not permitted to attack such emerging defenses in fear of Chinese retaliation. As a result, Hanoi possessed one of the finest air defense systems in the world and, in turn, became "a depository for downed US aircraft; Hanoi prisons were filled with downed US pilots" (53:77). In response to a humanitarian need to allow enemy Viet Cong to "visit" their homeland, periodic "cease-fires" were commonplace. Visitation was not the only activity during these fighting

lulls. The massive, surprise Tet offensive in 1968 was "the capstone of the enemy's deceptive use of the cease-fires to reestablish their presence over larger areas with resupply, recruiting, and reorganization" (53:77). Still, other problems, other disasters, and other bad decisions reigned supreme in the Vietnam War. Pressures to end the war and the decision by prominent TV anchormen that "it was time to get out of Vietnam" brought about a program of premature withdrawals. As pointed out by USMC General Raymond Davis, "had it been clear from the beginning that [the role of US forces was] to destroy the enemy forces, it would have been equally clear in 1969 that our mission had not been accomplished" (53:78). Some years later, Secretary of Defense Caspar Weinberger stated, "The problem [with Vietnam] was we didn't want to win that war. We never intended to win that war. . . .If it isn't important enough to win, it is not important enough to be there" (128:355). To commit America's military forces and then withhold support is to betray those men and women who so bravely serve this great land. When America goes to war, America must go to win--it is that, or stay at home.

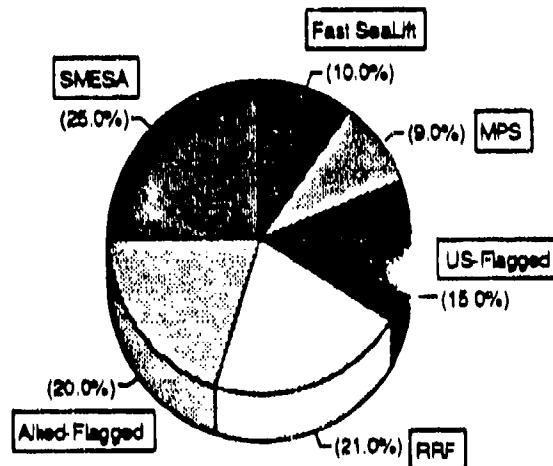
At the highest echelons of command, the military objective has changed to deterrence rather than traditional victory in combat. No longer can the US rely on overpowering its opponents. Today, war is movement. A series of pitched battles from long-held ground positions

often used during the Civil War, the Spanish-American War, World War I, and in some instances, World War II, Korea, and Vietnam, will probably never again exist. Although Iraq was certainly "dug-in" during "Operation Desert Storm," the overwhelming multinational air campaign pretty well denied any quasi-"pitched battles." The magnitude of any battles during Desert Shield/Desert Storm is pale in comparison to those aforementioned. For this and other reasons, the DOD must be prepared to deploy at a moment's notice; the key to success is likely to be instantaneous response. One recent success comes to mind: "Operation Desert Shield/Desert Storm." A closer examination is warranted.

The Persian Gulf War

As logisticians, there are several things to remember about US involvement in the Persian Gulf War. To begin, Iraq in its desperate desire to "dig in," afforded the US almost five and one-half months to freely build up America's forces in the Middle East--five and one-half months with no enemy action on the seas, on the land, or in the air. The US Merchant Marine is all but obsolete; nevertheless, foreign contract sealift support was fully utilized. Many assets were prepositioned at Diego Garcia. Furthermore, the Strategic Air Command flew the majority of its missions from Diego Garcia (taking full advantage of the absence of enemy air intervention). To assist with the airlifting of personnel and equipment, part of the Civil Reserve Air

Fleet, for the first time in its history, was activated. Again, the US took every advantage of no enemy air actions. Military Airlift Command (MAC), during the first 30 days of Operation Desert Shield, moved an "astounding 72,000 tons of equipment and 91,000 service personnel halfway around the world [to Saudi Arabia]" (208:32). As of mid-March 1991, MAC flew 16,400 sorties transporting 544,000 personnel and 562,000 tons of cargo to the Persian Gulf (33). Military Sealift Command (MSC), between 7 August 1990 and 19 March 1991, was responsible for shipping 3,306,569 tons of cargo (see Figure 3) while the Military Traffic Management Command (MTMC) deployed 83,628 personnel and 2,208,830 tons of cargo in support of Desert Shield/Desert Storm (33).



Source: (33)

FIGURE 3: MSC Modes of Shipment

Strong support was evident. US citizens, in a show of support for US forces in the Middle East, literally painted every hometown in hues of red, white, blue, and yellow.

Congress and the Bush administration was behind US involvement from the beginning--this war was important enough to commit America's forces in that noble cause of freedom, and it was important enough to do so with an absolute desire to win. Many other countries displayed their support for the liberation of Kuwait (see Table 4).

TABLE 4
Arms Strengths, 1990

<u>Country</u>	<u>Main Battle Tanks</u>	<u>Artillery, Rocket Launchers</u>	<u>Combat Aircraft</u>	<u>Armed Helicopters</u>
Egypt	2,425	1,560	520	90
Israel	3,790	1,400	680	77
Jordan	1,130	250	110	24
Syria	4,050	2,500	510	130
Iraq	5,500	3,700	510	160
Kuwait	275	90	36	18
Saudi Arabia	550	450	180	20
Iran	500	900	190	110
United Arab Emirates	130	155	60	19

Source: (87)

For the first time since World War II, American and Soviet leaders met each other, not as cold war adversaries or even as wary rivals to make their competition more manageable but as partners cooperating against a common enemy--Iraq's leader, Saddam Hussein, and a demand for his unconditional withdrawal. Saudi Arabia did a great deal in supporting the coalition. Generally speaking, Saudi's infrastructure was intact, solid, and accessible by US forces. Saudi Arabia provided the bulk of petroleum products (especially jet fuel) as well as a high percentage of food stuffs. Many

countries, including Saudi Arabia, contributed money and military support. Great Britain and France were actively involved with the US from the onset (see Table 5).

TABLE 5
Iraq versus the Coalition

<u>Category</u>	<u>Iraq</u>	<u>Multinational Forces</u>
Active Forces	430,000	356,000
Combat Aircraft	513	1,351
Combat Ships	0	117
Tanks	3,500	1,870

Source: (36)

Command and control of the mammoth undertaking, noted as the largest deployment since World War II, fell squarely on the shoulders of General Hansford T. Johnson, USAF CINC of the US Transportation Command (TRANSCOM) headquartered at Scott AFB IL. Testifying before a hearing of the Senate Armed Service Committee in March 1991, General Johnson said that the command's ability to mobilize such a large military force in so short a time added a new capability to America's arsenal. "If rapid deployment," he said, "prevented Saddam Hussein from moving his troops into Saudi Arabia, then mobility itself can be seen as a deterrent to military aggression" (33).

Iraq's land grab drew inevitable comparisons with the 1930s when Hitler began to gobble up Europe in pieces small enough not to provoke a military response by the powers of the day. It did not take long before fears grew that Iraq,

having devoured Kuwait, would turn next to other appetizing and vulnerable gulf nations--most notably Saudi Arabia, the richest of them all. The extent to which the NATO countries, the Soviet Union, and the threatened Arab states moved to thwart Iraq's aggression implies the leadership in that coalition has learned the lessons of history--perhaps, they are no longer "condemned to repeat it" (221:284).

Lessons Learned. For 16 years following the end of the Vietnam War, America's only humiliating military defeat, there have been those who cautioned against US involvement in any more wars, citing the lessons of Vietnam. The lasting trauma of Vietnam for the American military came in being asked to fight a war whose objective was never made clear, a war the American people were ultimately unwilling to support. Now there are new lessons--those of the Persian Gulf War--and they are as profound in their success as the lessons of Vietnam were profound in their failure.

The first lesson is the necessity of having a President who clearly articulates goals and sets about selling them to the American people. After a somewhat shaky start, President Bush found his stride--to his political and military planning, the president added an outline of the moral justification for the war. Demonstration of American support was evident--yellow ribbons and American flags bathed the country.

The second lesson was the value of having international support rather than embarking on a go-it-alone strategy. Secretary of State James Baker put together a coalition of countries and revived the moribund United Nations to pass resolutions supporting American objectives and endorsing military intervention if all else failed. For a detailed compilation of United Nations Security Council Resolutions, see Chapter Six, Figure 10.

The next lesson learned was the value of a battle plan. The Persian Gulf War was scripted and acted out superbly by everyone involved. Unlike Vietnam, during which President Lyndon Johnson used to brag that US planes "can't even bomb an outhouse without my approval" (88:27), General Norman Schwarzkopf and his largely ground-based command were generally left alone to pick the targets which would ensure the shortest war possible with the least involvement of ground troops. General Schwarzkopf said, "You learn from every battle, and sometimes you learn more from negative leadership than positive leadership" (26:32). President Bush, despite his obvious concern and commitment, allowed the military men and women to do their jobs. In essence, the Chairman of the Joint Chiefs of Staff, Army General Colin Powell, and his compatriots have respected, not replicated, the lessons of the past. In Chairman Powell's own words, "If you're going to go in, go in big and get it over with fast" (26:29).

Another lesson was learned by the Pentagon, which handled the press brilliantly. The press has been tightly controlled in four recent military conflicts: the British invasion to take back the Falkland Islands, the liberation of Grenada from Marxist communists, the toppling of the dictator Manuel Noriega from Panama, and the liberation of Kuwait from the clutches of Saddam Hussein. Is it a coincidence that each of these was successful?

Three principles of air war were immediately clear: air superiority is indispensable to victory in modern war; all forces which fight in the air require a single, unifying command and control authority if they are to take fullest advantage of their capabilities; and advanced technology, coupled with realistic training, wins wars. These precepts, central to Air Force doctrine, have been validated by Operation Desert Storm.

President Bush, on March 1, 1990, proclaimed the Vietnam syndrome is over. Nine classic principles of war "provide a framework for comparing the Vietnam and Persian Gulf Wars" (236:23). The principle of primary importance is the "objective." Unlike Desert Storm, the goals of the Vietnam War were obscure to most US generals (as many as 70%). The "offensive" is the second principle. Quite simply, it mandates America is to "carry the war to the enemy and destroy its armed forces" (236:23). Vietnam was overshadowed by the US policy of containment. In the

Persian Gulf, the military's hands were untied for the first time since World War II. "Mass," the third principle, dictates the principal effort is wielded toward attainment of the main objective, while "economy of force," the fourth principle, covers secondary objectives. Mass and economy of force are closely interrelated. America had help with these two principles--it was the Soviet Union, after all, which permitted the US to mass its forces in Saudi Arabia while leaving an economy of force to guard Central Europe. Employing the required mass of force to the Gulf involved yet another principle, that of "maneuver." More than 500,000 troops along with their arms, equipment, and supplies, had to be transported from the US or Europe to the Gulf. The principle of "security" was virtually non-existent in Vietnam. On the other hand, restrictions on the press in the Gulf "raised a few whimpers, but in the end justified its necessity" (236:26). The principle of "simplicity" serves as a kind of litmus test for all of the other principles. The Vietnam War was one of the most complicated ever waged. Confusion manifest itself on every battlefield. The attrition rate due to "friendly fire" was phenomenal. Desert Shield, by contrast, was the model for simplicity, especially in the lines of communication, command, and control. This was particularly noteworthy for, like Vietnam, politics made it impossible to achieve the principle of "unity of command." All forces could not be

subordinated to a single leader. But through cooperation among the allies, unity of purpose was achieved. The multinational air campaign and the 100 hour multinational ground campaign that followed attest to a single purpose-- Iraq's unconditional withdrawal from Kuwait.

Some problems do exist. Attention in the 1990s to the federal deficit, and demands from influential people with their eyes on a "peace dividend," have forced large reductions in the DOD budget, despite continued military personnel on duty in the Middle East.

Summary

Military logistics history is not merely the study of obscure facts and footnotes. The intelligent study of military logistics history provides insight into the evolution of strategic thought, the political and military objectives of warfare, the influence of technology on operational concepts, and the capabilities and limitations of military forces. History provides examples of success and failure in military operations and provides clues relating to the reason for the success or failure. As a nation, the US must not be forgetful of the past. Americans cannot avoid, by omission or lack of emphasis, the learning possible from history.

George Washington, in the First Annual Address to both houses of Congress on 8 January, 1790, said, "To be prepared for war is one of the most effectual means of preserving

peace" (253). Although the probability of another world war may be slim for the near future, it would seem prudent for all Americans to heed his advice.

Technology has jumped by leaps and bounds culminating in sophisticated and mechanized warfare. Best records indicate that the US used at least 100 pounds of supplies per man per day in Vietnam. For "Operation Just Cause," the requirement grew to more than 125 pounds of supplies per man per day (201). Operation Desert Shield requirements are far in excess of 140 pounds of supplies per man per day (bearing in mind Saudi Arabia furnished the bulk of POL and a significant percentage of food). Much of that weight is attributable to the heavy, sophisticated equipment used to complement today's technological leading edge in American weapons systems.

From a historical perspective, it is reasonable to presume the supplies and equipment produced in one war tend to become, to some extent, the reserve of the next. Such reserves provide a cushion, of sorts, permitting industrial mobilization of a nation to meet materiel requirements. Before current demands could be met through new procurement, World War I assets proved to be valuable in the early stages of World War II. It must be noted the Lend-Lease program also contributed handsomely to meeting a surging wartime materiel requirement during this period. Certainly, equipment and supplies left over from World War II provided

support that otherwise would not have been available for early combat operations in the Korean War. Early requirements for the Vietnam War were no different. So, too, was the case in Desert Shield/Desert Storm. Some of the equipment and supplies were modified versions of the same used in the Vietnam War. Examples include the F-4 Phantom aircraft and the C-130 Hercules aircraft.

This chapter examined problem areas common to many of the campaigns fought by US forces during the past fifty years. Although the history of such campaigns cannot always provide solutions to current problems, it can provide a fresh perspective and rekindled insight into those problems. History can establish a firm foundation from which the right kinds of questions may be asked.

References Cited in Chapter Three

(Numbers refer to Citations and Master Bibliography Listing)

11. Badger, Oscar C., Vice Admiral, USN. "Problems of Command and Logistics." Speech before the Industrial College of the Armed Forces. Washington DC, November 18, 1949.
18. Bender, David, and Leone Bruno, editors. The Vietnam War. San Diego CA: Greenhaven Press, 1990.
19. Blair, Clay. The Forgotten War. New York: TIME Books, 1987.
26. Budiansky, Stephen. "Lines in the Sand," US News and World Report, 109: 28-34 (October 1, 1990).
33. Butler, Katherine. "Operation Desert Storm: The Logistical Story," Government Executive: 41 (May 1991).
36. "Case for War, The," Newsweek, 116: 28-30 (October 29, 1990).
53. Davis, Raymond G., General, USMC. "Politics and War: Twelve Decisions that Rendered Defeat in Vietnam," Marine Corps Gazette: 75-78 (August 1989).
84. Dilla, Benjamin L., Major, USAF. "Logistics Support Limitations in the Vietnam War: Lessons for Today's Logisticians," Air Force Journal of Logistics, 14: 35-37 (Fall 1990).
87. Duffy, Brian. "The Man Who Would Be King," US News and World Report, 109: 20-25 (August 13, 1990).
88. Duffy, Brian. "The Right Stuff," US News and World Report, 110: 24-31 (February 4, 1991).
94. Field, James A., Jr. History of United States Naval Operations Korea. Washington DC: Government Printing Office, 1962.
102. Futrell, Robert F. The United States Air Force in Korea. Washington DC: Office of Air Force History, 1983.
113. Gough, Terrence J. US Mobilization and Logistics in the Korean War. Washington DC: Center of Military History, United States Army, 1987.

115. Gregory, Ross. The Origins of American Intervention in the First World War. New York: W.W. Norton & Company, Inc., 1971.
124. Heiser, Joseph M., Lieutenant General, USA. "Vietnam Logistics: Past is Prologue?" Defense Management Journal, 12: 74-80 (July 1976).
125. Heiser, Joseph M., Lieutenant General, USA. "Logistics Support." Department of the Army, Vietnam Studies. Washington DC: 15 December 1972 (published 1974).
128. House of Representatives. Department of Defense Appropriations for 1982: Hearings before a subcommittee of the Committee on Appropriations. 94th Congress, 1st session, 1981.
130. Huntington, Samuel P. The Common Defense. New York: Columbia University Press, 1961.
133. Huston, James A. "Korea and Logistics," Military Review, 36: 18-32 (February 1957).
134. Huston, James A. "Korean Logistics." An unpublished manuscript (June 1960).
135. Huston, James A. The Sinews of War: Army Logistics 1775-1953. Department of the Army, Office of the Chief of Military History, 1966.
143. Kendall, Michael. "An Inflexible Response: United States Army Manpower Mobilization Policies, 1945-1957." A Ph.D. dissertation, Duke University, 1982.
164. Link, Arthur Stanley. Woodrow Wilson and the Progressive Era, 1910-1917. New York: Harper & Brothers Publishing, 1954.
166. Lutes, LeRoy, Lieutenant General, USAF. "Logistics in Grand Strategy." Speech before the National War College. Washington DC, February 13, 1950.
187. Momyer, William M. Airpower in Three Wars. Washington DC: Government Printing Office, 1978.
199. Peppers, Jerome G., Jr., Professor Emeritus. Class lecture notes, "History of US Military Logistics," LOGM 666, Spring Quarter. Air Force Institute of Technology (AU), Wright-Patterson AFB OH, 25 March 1991 through 7 June 1991.

200. Peppers, Jerome G., Jr. Military Logistics: A History of United States Military Logistics 1935-1985. Huntsville AL: Logistics Education Foundation Publishing, 1988.
201. Peppers, Jerome G., Jr., Professor Emeritus. "Transportation Logistics." Address to the Air Force Transportation Squadron Commanders. Air Force Institute of Technology (AU), Wright-Patterson AFB OH, 20 July 1990.
208. Powell, Stewart M. "Desert Duty," Air Force Magazine, 74: 30-35 (February 1991).
211. Quirk, John T., Lieutenant Colonel, USAF. "An Analysis of Air Force Logistics Shortfalls of the Vietnam Buildup of 1965-68 as an Indicator of Shortfalls in Future Conflicts," unpublished research report, Air War College (AU), Maxwell AFB AL, 1980.
213. Ridgway, Matthew B. The Korean War. New York: Doubleday, 1967.
218. Roosevelt, Franklin D. "Fireside Chat" on 29 December 1940. White House, Washington DC. From Roosevelt: The Soldier of Freedom. James MacGregor Burns. New York: Harcourt Brace Jovanovich, Inc., 1970.
220. Rutenberg, David C., Lieutenant Colonel, USAF, and Jane S. Allen, editors. The Logistics of Waging War: American Logistics 1774-1985. Maxwell AFB AL, Air Force Logistics Management Center. Undated. Issued December 1986.
221. Santayana, George. "Reasons in Common Sense," Life of Reason. Cambridge, Great Britain: University Printing House, 1980.
231. Sparrow, John C. History of Personnel Demobilization in the United States Army. Washington DC: Department of the Army, Office of Chief Military History, 1951.
232. Spector, Ronald. Eagle Against the Sun: The American War with Japan. New York: The Free Press/MacMillan, 1985.
236. Summers, Harry G., Jr., Colonel, USA (retired). "U.S. Victory in Gulf War Exorcises the Ghost of Vietnam," Air Force Times, 52: 23-26 (March 18, 1991).

252. Vawter, Roderick L. Industrial Mobilization: The Relevant History. Washington DC: National Defense University Press, 1983.
253. Washington, George. President of the United States, 1789-1797. "First Annual Address." Inaugural address before both Houses of Congress, Federal Hall, New York City, 8 January 1790.

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IV. History of United States Aerospace Doctrine

Chapter Overview

The conduct of war is the art and science of using military force with other instruments of national power to achieve victory (69:1-1). Karl von Clausewitz, one of the most famous writers on the philosophy and history of war, once wrote, "War is not merely a political act, but also a political instrument, a continuation of political relations, a carrying out of the same by other means" (43:16). This statement challenged the earlier view that people fight, and then make up. Once the decision to use military force is made, doctrine best describes the way to employ military forces to achieve national objectives. "At the very heart of warfare," as pointed out by General Curtis LeMay, "lies doctrine" (69:1). General LeMay continued,

It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is the building material for strategy. It is fundamental to sound judgment. (69:1)

Military doctrine is the footstool of current military policies and procedures--all that is good and bad for logisticians is founded upon doctrine. Doctrine, as defined by the Joint Chiefs of Staff, is that set of "fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives" (60:119). This chapter examines but one critical aspect of military doctrine--that of aerospace doctrine. In the

foreword to Air Force Manual 1-2, United States Air Force Basic Doctrine, published on 1 April 1953, General Hoyt S. Vandenberg, USAF Chief of Staff, noted: "Basic air doctrine evolves from experience gained in war and from analysis of the continuing impact of new weapons systems on warfare" (73:1). A brief, historical synopsis of US aerospace doctrine, designed to provide a backdrop for recent events sweeping the globe in the 1990s, follows.

US Aerospace Doctrine from 1907-1960

It has been argued, perhaps justifiably so, that "had it not been for the support of the military for military purposes, we would even now [1958] I am sure not have safe commercial aviation" (100:15). Indeed, the airplane was intended "to be a contribution to international communications, trade, and goodwill" (100:15). The Wright brothers, after successfully accomplishing their legendary flight on 17 December 1903 at Kitty Hawk, North Carolina, balked on their own intentions. The US War Department was their first contact in a bid to sell their airplane. "The series of aeronautical experiments upon which we have been engaged for the past five years," as documented in a letter written by Orville Wright on 18 January 1905,

have ended in the production of a flying machine of a type fitted for practical use. . . .The numerous flights . . . have made it quite certain that flying has been wrought to a point where it can be made of great practical use in various ways, one of which is that of scouting and carrying messages in time of war. (100:15)

In a similar vein, Orville Wright provided another informal offer, this time on 15 June 1907 to the Board of Ordnance and Fortification, stating, "We believe that the principle use of a flyer at present is for military purposes; that the demand in commerce will not be great for some time" (100:15). Motivated by President Theodore Roosevelt's undaunted persistence, the affairs of aviation noted increased attention throughout the War Department in 1907. "On 1 August [1907], Brigadier General James Allen, the Army's chief signal officer, established an Aeronautical Division within the Signal Corps" (100:16). General Allen's suspicions were evident in a letter to the Board wherein he wrote, "the military uses of a flying machine of any type will be only for purposes of observation and reconnaissance, or, as an offensive weapon, to drop explosives on the enemy" (39:40-43). With regard to air-dropping explosives, the general had this to say (100:16):

For the purpose of dropping explosives on an enemy, a high speed aeroplane is hardly suitable. . . .In passing over the enemy's works a flying machine should travel at least 4,000 feet above the earth. . . .Traveling at the rate of thirty miles an hour at this altitude, even after considerable practice, it is not thought a projectile could be dropped nearer than half a mile from the target.

Nevertheless, on 5 December 1907, the Board mandated bid solicitation "for the delivery of a heavier-than-air flying machine designed to carry two persons. . .125 miles and capable of a speed of at least 40 miles an hour" (100:16). The first plane, built by the Wright brothers, was acquired

by the War Department on 2 August 1909 (100:16). During a season of uneasiness with Mexico when the US refused to recognize the revolutionary regime of General Victoriano Huerta, Army aviators were dispatched on 22 February 1913 to Texas City, Texas (107:7). Within weeks, "the detachment was organized as the 1st Aero Squadron" (100:17). The advent of such an organization fostered the birth of aerospace doctrine.

World War I. US Army regulations, revised in 1914, alluded to the employment of combined arms through aviation. With little fanfare, these regulations "assigned the predominant combat role to the infantry" (100:17). In summary,

the infantry is the principle and most important arm, which is charged with the main work on the field of battle and decides the final issue of combat. The role of the infantry, whether offensive or defensive, is the role of the entire force, and the utilization of that arm gives the entire battle its character. The success of the infantry is essential to the success of the combined arms. (100:17)

"In forces of the strength of a division, or larger," the regulations went on to say, "the aero squadron will operate in advance of the independent cavalry in order to locate the enemy and to keep track of his movements" (100:17).

US participation in World War I loomed over the horizon. In an effort to boost a lethargic aeronautics capability, the US Congress "established the National Advisory Committee for Aeronautics (NACA) as an independent agency" (100:19). The purpose of the NACA was to engage in

the "scientific study of the problems of flight with a view to their practical solution," and to "direct and conduct research and experiments in aeronautics" (107:11). Although the US was disinclined to initiate rearmament, the National Defense Act of 1916 set about to increase the strength in the Signal Corps Aviation Section and to establish a reserve corps of officers and enlisted men. 1916 was a good year for expansion. In that year the War Department authorized the organization of seven aero squadrons, each with twelve planes--four squadrons in the US and three overseas. In addition to the 1st Aero Squadron, the 3rd, 4th, and 5th would also be stationed in the US. The 2nd Aero Squadron would be organized in the Philippines, the 6th Aero Squadron would be stationed in Hawaii, and the 7th in Panama (107:11). All of the squadrons were in existence early in 1917, but only the 1st was fully organized and equipped at the outbreak of World War I on 6 April 1917.

During the course of World War I, the idea of "air supremacy" evolved. Aviation was divided into two distinct classes: tactical and strategical aviation (100:22). Tactical aviation, "which operated in the immediate vicinity of troops of all arms, consisted of observation, pursuit, and tactical bombardment" (100:22). Observation squadrons "performed visual and photographic reconnaissance, adjusted artillery fire, and provided liaison services" (100:22). Pursuit squadrons "attained mastery of the air in air

battles and, when necessary, created diversions by attacking [the enemy] on the ground" (100:22). Tactical bombardment squadrons "operated within 25,000 yards of the front lines. [Their primary] objectives were to [destroy] enemy materiel, to undermine the [enemy's] morale, and to force [enemy participation in "dog-fighting"]" (100:22). Strategical aviation, which performed in the distant forefront of other US services, had an autonomous objective. The goal of strategical aviation was to "destroy the means of supply of an enemy army, thereby preventing it from employing all of its means in combat" (100:22).

When the US made the decision to assist its Allies involved in World War I, the US Army "did not possess a single modern combat aircraft" (100:19). During WWI the US manufactured 11,760 airplanes, with the US Air Service, American Expeditionary Forces, receiving 6,284 planes (112:34-35). None of these experienced combat action in Europe. Field Marshall Jan Christian Smuts, chairman of the Committee on Air Organization and Home Defense (100:27), reported to the British Prime Minister on 17 August 1917,

It is important for the winning of the war that we should not only secure air predominance, but secure it on a very large scale; and having secured it in this war we should make every effort and sacrifice to maintain it for the future. Air supremacy may in the long run become as important a factor in the defense of the Empire as sea supremacy. (100:27)

According to his memoirs, General Billy Mitchell, perplexed and a bit saddened Armistice "had come before aviation had

proven itself" (100:27), stated, "I was sure that if the war lasted, air power would decide it" (185:267-268).

Post-World War I. With the end of World War I came lessons learned from the experience. For example, the Air Service, AEF, according to one report, "had developed along four general lines: Observation, distant reconnaissance and bombing operations, aerial combat, and combat against ground troops" (100:28). In the end, many writings prepared immediately following WWI reflected the predomination of observation as the primary Air Service mission (100:29).

Many reports and manuals went on to point out

that in the future, as in the past, the final decision in war must be made by men on the ground, willing to come hand-to-hand with the enemy. When the Infantry loses the Army loses. It is therefore the role of the Air Service, as well as that of the other arms, to aid the chief combatant, the Infantry. (100:29)

An operations manual, issued in 1918, also "portrayed aviation as a supporting arm for the Infantry rather than as a decisive force" (100:29).

Other fundamental assertions, generally agreed to by those in executive positions at the time, included:

- * aeronautics would play an increasingly important role in future war in proportion to the capacity of a nation to produce aircraft and train personnel for aircraft maintenance and operation;
- * no nation could afford to maintain military air fleets required for war in time of peace;
- * the nation that first mobilized a superior air fleet after a war began would have an undoubted advantage;
- * a nation desirably should have a full development of commercial aviation in order to provide military potential in time of war. (100:29-30)

In 1919, General Mitchell was assigned as chief of the Training and Operations Group, the headquarters department responsible for preparing tactical manuals and war plans (131:41). This department, through rigorous and stimulating thought processes, "developed many of the ideas which eventually would be recognized as Air Force doctrine" (100:31). While assessing the airplane's influence on the art of war, for example, Mitchell's department asserted significant peculiarities between the effect of air intervention on land and on sea. "On land," it was reasoned, "battle is determined by morale: the aim therefore is to destroy morale by methods that are based on unchanging human nature" (100:32). On the sea, conversely, "warfare was a product of industrial and inventive genius and firepower" (100:32). "Aircraft, together with submarines, had the ability to destroy naval vessels, and it was obvious the airplane had altered the means by which sea power was to be attained" (100:32). Mitchell, and his group, "advocated a single department of aviation," emphasizing a need for unity of air command (100:32-33). "The principle mission of aviation," according to General Mitchell, was

the destruction of the hostile aviation, in the same way that the principle mission of the navy is the destruction of the hostile navy, or the principle mission of the army is the destruction of the hostile army. Therefore, in order to unite and bring your greatest effort to bear in any one place it is necessary to unite all the elements of your aviation at the place where the decision is called for, no matter whether it is war on the sea or war on land. (100:33)

As part of the Army Reorganization Act, enacted on 4 June 1920, the Air Services were formally recognized and "made a part of the combat line of the Army" (100:35). On the next day, an addendum to the Army's FY1921 appropriation bill provided "that the Army Air Service should control all aerial operations from land bases and that the Navy should control all aerial operations attached to a fleet" (100:35). As approved by the 66th Congress in Public Law 251, the Act provided (188:48-49):

Hereafter, the Army Air Service shall control all aerial operations from land bases, and Naval Aviation shall have control of all aerial operations attached to a fleet, including shore stations whose maintenance is necessary for operation connected with the fleet, for construction and experimentation and for the training of personnel.

In his book Our Air Force, General Mitchell synopsized his beliefs on aviation. "As a prelude to any engagement of military or naval forces," he predicted (186:xix),

a contest must take place for control of the air. The first battles of any future war will be air battles. The nation winning them is practically certain to win the whole war, because the victorious air service will be able to operate and increase without hindrances.

Nowhere is this more pronounced than during the present-day Persian Gulf War (1990-91). But before that war is explored, a closer examination of earlier wars is warranted.

In the years between World War I and World War II, aviation enthusiasts suddenly emerged. Perhaps the most celebrated event of that time was Charles Lindbergh's epic, maiden, trans-Atlantic solo flight on 20-21 May 1927. Public fantasy was stimulated--everyone "wanted to fly"

(100:61). Early in 1928, a paper entitled "The Doctrine of the Air Force," authored by the commandant of the Air Corps Tactical School, was sent to Washington. In essence, it stated the air forces "always support the ground forces, no matter how decisive its operations may be, or how indirect its support" (100:63). Immediately, exception was taken with its intent to follow the letter of the law as set forth in the War Department Training Regulation 440-15. One such "revision" stated,

The objective of war is to overcome the enemy's will to resist, and the defeat of his army, his fleet or the occupation of his territory is merely a means to this end and none of them is the true objective. If the true objective can be reached without the necessity of defeating or brushing aside the enemy force on the ground or water and the proper means furnished to subdue the enemy's will and bring the war to a close, the object of war can be obtained with less destruction and lasting after effects than has heretofore been the case. At present the Air Forces provides the only means for such an accomplishment. (100:63)

It was also widely recognized during this time that military aviation had transitioned from a defensive nature to an offensive nature. Giulio Douhet, a famous Italian writer of this period, observed "now that aviation has entered the ranks as a means of carrying on war, more than ever war is going to be a question of give and take" (95:27). Some authors contend "it emphasizes the fact that air force is principally an offensive weapon rather than a defensive one" (100:64). In the years that followed, events around the globe gave Americans reason to be grateful for such a transition.

Although the protection of the United States has always been the primary aim of defense planning, President Roosevelt was keenly aware that America's security depended on overpowering the Axis powers and Japan. Recognizing the impending danger imposed by these powers, committees and planning conferences began as early as 1938 to establish rudiments of cooperation "should the United States be compelled to resort to war" (100:108). The Allied offensive in Europe "was to include economic pressure through blockade, a sustained air offensive against German military power, early defeat of Italy, and the buildup of forces for an eventual land offensive against Germany" (100:108). According to a lecture presented by Major General Orvil Anderson in 1953, the Allies were to hasten to achieve "superiority of air strength over that of the enemy, particularly in long-range striking forces" (100:108). With Japan's attack on Pearl Harbor on 7 December 1941, "military ideas, concepts, and doctrine would now be tested in global warfare" (100:114).

World War II. "In the nineteen-thirties, when air power was the unseen guest at those grim conferences which marked the Nazi march to power," noted General "Hap" Arnold, "the Army Air Corps, which preceded the Army Air Forces, had drawn its blue-prints for war" (8:149). "The Air Corps Tactical School," General Arnold observed, "had formed the

strategic and tactical doctrines that would later guide our campaigns in World War II" (8:149).

A metamorphosis, of sorts, occurred in the spring of 1942 that would transform the structure of the War Department and the Army Air Forces (AAF). Beginning in March of that year, "the War Department was consolidated into three coordinate forces, each under a commanding general: the Army Air Forces, the Army Ground Forces, and the Services of Supply (later the Army Services Forces)" (100:129). The mission of the new Army Air Forces was "to produce and maintain equipment peculiar to the Army Air Forces, and to provide air force units properly organized, trained, and equipped for combat operations" (188:9), with no primary consideration given to "actual combat operations or strategic planning" (100:129).

The blueprint of the Army Air Forces was unveiled in such a manner so as to foster a speedy assemblage of the world's mightiest air force. In 1943, General Arnold declared the AAF Headquarters "must stop operating and spend its time thinking in order that we can correctly tell our commanders what to do and maybe sometimes when to do it but not how to do it" (188:43). Although General Arnold profoundly believed the AAF should not dictate the intricacies of job performance to subordinate commands, he was, nevertheless, quite perceptive--the AAF "had no compact body of doctrine to guide the thinking of its thousands of

newly commissioned officers" (100:135). Indeed, a 1943 staff study noted,

the most important single adverse factor, the condition which is the greatest cause of general failure of the Air Forces to attain proper results, is the lack of an authoritative and concise statement of AAF doctrine and employment policies. A ready guide is not available, and each combat zone is improvising its own doctrine or interpreting older doctrines that have not been kept up to date. (103)

To alleviate any inconsistencies, General Arnold ordered Brigadier General Byron Gates to assimilate and publish a doctrinal guide that would "present a comprehensive picture of the objectives of Air Forces in Theaters of Operations and of the organization available to attain those objectives" (100:136). Such a document, entitled The Air Forces in Theaters of Operations: Organization and Functions, came to fruition when published in 1943. Containing "six booklets with a total of 27 chapters," the publication, according to General Arnold, "represented Air Force doctrine" (100:136). In General Arnold's words, "It is not rigid doctrine. It is subject to change when change is indicated. It points out what can be done with the means at our disposal, but it must not prevent us from utilizing those means fully in other ways and for other purposes" (100:136). On 21 July 1943, a new manual, Command and Employment of Air Power, was published (100:138). The new manual attacked decentralization of air power control. "The inherent flexibility of air power," as documented (100:138),

is its greatest asset. This flexibility makes it possible to employ the whole weight of the available air power against selected areas in turn; such concentrated use of the air striking force is a battle-winning factor of the first importance. Control of available air power must be centralized and command must be exercised through the Air Force commander if this inherent flexibility and ability to deliver a decisive blow are to be fully exploited. Therefore, the command of air and ground forces in a theater of operations will be vested in the superior commander charged with the actual conduct of operations in the theater, who will exercise command of air forces through the air force commander and command of ground forces through the ground force commander.

Much emphasis was given to the indoctrinization of air force philosophy during the course of World War II. In fact, "World War II was doubtlessly the best reported and most thoroughly documented conflict of all time" (100:146). One consequence, contended the civilian scholar Bernard Brodie, was "the divorcement of doctrine from any military experience other than that which has been intensely personal with its proponents" (100:147). Such occurrences gave rise to many ill-conceived doctrinal notions. "If you will only let experience be your teacher," warned Major General Anderson, "you can have any lesson you want" (100:147). Because experience must first be construed in terms of present and future applicability, "progress in the development of military science and strategy," General Anderson said, "is vitally dependent upon the soundness of the evaluations of past battle experience and upon the boldness, inspiration and depth of the projected thinking which creates the solution for the future" (100:147). One of the major lessons of the war with Japan, in retrospect,

was the value of air power for keeping the peace. In November 1945, Lieutenant General George Kenney, Allied Air Forces commander of the Southwest Pacific Area and the US Far East Air Forces, said, "I believe that air power is this Nation's first line of defense and that only in air power can we find a weapon formidable enough to maintain the peace" (100:147). Largely as a result of its demonstrated effectiveness in World War II, strategic bombardment (one such formidable arm of air power) continued as the USAF's major focus from its inception through the early 1960s. Its primacy was reinforced by the functional reorganization in 1946 culminating in the origin of the Strategic Air Command (SAC) as one of three air commands of the Army Air Forces. SAC was charged with being prepared to conduct worldwide strategic operations and reconnaissance, and providing units for sustained combat. SAC was directed to maintain a global air striking force and to train very heavy bombardment crews

Deterrence was thus born. In a Senate hearing in October 1945, General Arnold, accenting America's defense role rested squarely upon the AAF, declared,

The defense has got to be an offensive mission against the source [of enemy power]. . . .But, better still, the actual existence of these weapons of our own in sufficient quantities and so located that a potential aggressor knows we can use them effectively against him, will have a very deterring effect, particularly if the aggressor does not know the whole story and only knows part of the story. (100:148)

However, deterrent capability is not composed of a nation's air arm only. One of the major lessons of World War II was

the need for the military services, both in the US and elsewhere, to work together in mutually supporting ways to defeat an enemy.

World War II illustrated the importance of a composite victory. The combination of air, ground, and naval forces proved illuminating. According to Secretary of War Robert Patterson in October 1945,

the elementary lessons which we have learned from the hard experience of World War II is that there must be a single direction of the Nation's land, sea, and air forces. . . these arms must operate as a single team under single direction, which has final responsibility and final power of decision over all. (100:168)

Other high-ranking Army officers agreed the composite force structure was instrumental in aiding the Allied victory in WWII. In October 1945, General Marshall stated, "The national security is measured by the sum, or rather the combination of the three great arms, the land, air, and naval forces" (100:169). "It is my opinion," said General Omar Bradley in November 1945, "no one service won this war or is going to win any future war of any magnitude. It takes all our services together, plus the industrial effort of our nation to win any major war" (100:169).

Nevertheless, domination of the air was essential. Although the Air Force had clearly received primary responsibility for strategic operations by this time, controversy arose once again with the advent of guided missiles. Intercontinental ballistic missiles (ICBMs) promised a new long-range strategic weapon, one without

historical precedent to guide mission assignment. In 1950, the USAF was assigned to develop air-to-air missiles and missiles for the strategic bombardment mission. With the strategic bombardment mission now intact, the USAF was firmly in control of two of the three legs of what later was called the nuclear deterrent triad--strategic bombers, ICBMs, and submarine-launched ballistic missiles. Summing up the situation, General Doolittle reminded his contemporaries that "the first lesson [of any war] is that you can't lose a war if you have command of the air, and you can't win a war if you haven't" (100:171). Others, writing in 1950, noted, "It has long been held as Air Force doctrine that air superiority should be the primary mission of air power" (100:171). Such an emphasis on air superiority complemented the ideal of combined forces, and heralded in the emergence of deterrent capability--the preamble to the "cold war."

The "cold war" originated in World War II, but was not officially recognized for some time to come. Although postwar defense planning was underway prior to the end of World War II, no one apparently identified a worthy opponent for the United States. Some leaders recognized the Soviet Union's adversarial relationship with the free world at different times. For example, General Carl Spaatz, writing General Arnold in October 1945, warned,

With the rapid weakening of our forces in Europe and Asia, the USSR is able to project moves on the continent of Europe and Asia which will be just as hard for us to accept and just as much an incentive to war as were those occasioned by the German policies. . . .I believe we should proceed rather slowly toward demobilizing our armed forces, particularly units of our Strategic Air Command. (100:214)

"The United Nations," it was widely believed, "would gain rapid and growing recognition as a central factor in the establishment and maintenance of world security" (100:214).

The "cold war" was soon underscored by a doctrine of mutual destruction capability--in effect, a "lose-lose" situation in which both the US and the Soviet Union possessed capability to destroy the other. Furthermore, it was believed by many that an atomic/nuclear capability lessened, if not totally eliminated, the necessity for a nation to maintain a continued state of conventional readiness. The deterrent capability rested not with the fact such capability existed, but with the assurance the owner of such capability was ready and willing to use it. Else, the effect of deterrence was diminished. General Spaatz, like many others, maintained a deep faith in multinational efforts to establish a system of collective security measures. Much of that faith rested with the efforts of the United Nations. Nevertheless, Spaatz was skeptical. "In modern warfare," he said, "any nation losing command of the air approaches to its vital areas is in serious peril" (100:214) He continues, "The surest defense will be our ability to strike back quickly with a

counteroffensive, to neutralize the hostile attack at its source, or to discourage its continuance by striking at the vitals of the aggressor" (100:214). Strategic Air Command was appointed such a role in the event of such aggression. "Destruction is just around the corner for any future aggressor against the [US]. Quick retaliation will be our answer in the form of an aerial knock-out delivered by the Strategic Air Command" (52:35-36).

In 1943, General Marshall received a planning paper from Major General Thomas Handy's Operations Division. In part the paper stated, "The primary function of the armed forces is, when called to do so, to support and, within the sphere of military effort, to enforce the national policy of the [US]. . . .There must be," he continued,

a complete correlation of national policy with military policy; of the political ends to be sought with the military means to achieve them. Such correlation must be flexible; adaptable to changing conditions and changing needs. (100:201)

Supporting US national policy through the use of military forces was a novel idea. However, General Marshall readily approved the crux of Major General Handy's paper (100:201). The relationship between force and diplomacy was put more succinctly in General Marshall's final war report. He warned, "Our diplomacy must be wise and it must be strong. If our diplomacy is not backed by a sound security policy, it is, in my opinion, forecast to failure" (100:201)

Congress separated the air arm from the Army in 1947. The National Security Act (NSA) of 1947 was approved by the 80th Congress as Public Law 253 on 26 July 1947. The Congress, recognizing the importance of air power as a separate entity, established three military departments (Army, Navy, and Air Force), each with its own secretary, and the office of the Secretary of Defense. The act also created three new functions: the National Security Council (NSC) which was designed to advise the president on the integration of military, domestic, and foreign policies; the Central Intelligence Agency (CIA) which was designed to coordinate all government intelligence activities and report to the NSC; and the National Security Resources Board (NSRB) which was designed to coordinate military, civilian, and industrial mobilization. With the exception of the NSRB which has gradually been absorbed into other federal agencies, these functions exist today (135:579-580).

Although legally on equal footing with the Army and Navy under the National Security Act, the Air Force had to define its unique mission and doctrine "within a biased traditional and historical setting, within a competitive fiscal environment, and within controversy concerning service responsibility for the delivery of nuclear weapons" (241:47). The 1943 War Department Field Manual 100-20, Command and Employment of Air Power, was proclaimed a "declaration of independence" for air power; nevertheless,

the task of formulating a "constitution" remained untouched (100:69). Between 1947 and 1955, Air Force thinkers struggled with formulating a document of basic beliefs, policies, and operational procedures. The first of two complete, written USAF doctrine editions, both entitled United States Air Force Basic Doctrine, was published on 1 April 1953. The second, containing only minor editorial changes, was published on 1 April 1954 (100:398). After those two editions, a major shift occurred between 1955 and 1959 when a revised manual established a new horizon in USAF thinking. The transformation was one of doctrinal scope as illustrated by the change in the manual subtitle from "air power doctrine" to "aerospace doctrine" (241:47).

Cold War. Official recognition of the "cold war" was not put forth until 5 March 1946 when Winston Churchill delivered his "Iron Curtain" speech at Westminster College, Fulton, Missouri. The US Joint Chiefs of Staff have defined cold war as "a state of international tension wherein political, economic, technological, sociological, psychological, paramilitary, and military operations are employed to achieve national objectives" (60:72). The Soviet Union hinted at such operations on several occasions. The "antics of the Soviet representatives in the United Nations, the Iranian crisis of 1946, the Greek civil war, and Soviet pressure on Turkey gave the United States a better appreciation of the bipolar nature of world power and

of the challenge of Soviet expansionism" (100:221). Seeking "the containment of communism and. . .the defense of America," the US lent military and economic assistance to counter Soviet aggression in Iran, Greece, and Turkey, and in Trieste and Berlin (100:280). The winter of 1947-48 proved quite illuminating. It was during this timeframe the true intentions of the USSR became apparent. Western Europe began to look a bit appetizing to the Soviet Union. On 1 April 1948, Allied trucks and trains commuting to Berlin were sequestered for inspection by the Soviet military commander in Germany. On 24 June 1948, Soviet troops carried out their orders. A full blockade was in store. Western traffic into a victimized Berlin was brought to a standstill. Berlin had to be supplied by airlift. Under Secretary of State Robert Lovett reported,

[the US] decided to stand firm in Berlin and not be thrown out, confident that we could do the job ultimately by the same techniques that we used in lifting approximately 70,000 tons in one month over the hump from India to China at very high altitudes. (182:452-455)

"For the first time in history," as documented in the September 1948 issue of Air Force Magazine,

the United States is employing its Air Force as a diplomatic weapon. . . .Today, in keeping with its coming of age as the nation's first line of defense, the USAF has taken on two big assignments in international affairs. . . .One is what has been called 'the return of the American Air Force to Europe,' the arrival of two groups of Strategic Air Command B-29s in England. . . . The second is the Berlin Airlift. . . .The first chapters of the 'role of air power in diplomacy' are being written here. (195:25-26)

Another clue was cast aside just two years later when the Soviet Union encouraged North Koreans to infiltrate, harass, and subsequently invade South Korea.

Korean War. Following America's military withdrawal from Korea in June 1949, US forces in the Pacific and the Far East faced a geographically limited mission--defend the region which encompassed Japan, the Ryukyus, the Marianas, and the Philippines (100:292). General MacArthur clearly stated in a 1949 interview with a journalist in Tokyo that the Republic of Korea was no longer included in America's defense responsibilities (100:292). Secretary of State Acheson, in a speech on 12 January 1950, gave credence to MacArthur's statement, declaring,

the United States had certain points which were a defensive perimeter. At those points United States troops were stationed; there they would stay and there they would fight. In regard to other areas, I said nobody can guarantee that; but what we can say is that if people will stand up and fight for their own independence, their own country, the guaranties under the United Nations have never proved a weak reed before, and they won't in the future. (100:292)

The Soviet Union wasted no time taking advantage of what it perceived as a crucial advantage in East Asia. The Soviet Union, discounting US military retaliation, was convinced its North Korean pawns could easily achieve victory over the Republic of Korea. Such a military operation required no recognizable effort on the part of either Soviet or Chinese Communist forces. Nevertheless, although Soviet troops were not openly engaged, many were convinced that "militant

international communism inspired the northern invaders" and that, for the first time, "communism is willing to use arms to gain its ends" (100:293). "The Communist aggression in Korea," declared Secretary of Defense George C. Marshall,

"marked the beginning of a new military policy for the United States. It left no doubt the Soviet government and its satellites were willing to risk a general war by multiple aggression all over the world, unless confronted by substantial military strength" (100:293).

With such aggression, the 1950s saw the emergence of "limited war." Limited war is a misnomer. War is limited only in the minds of historians and others who write about it. A limited war is no small thing to those who must participate in it--it is absolute and total, even if it lasts but a brief period in a remote or confined location. To be certain, the United States "was compelled to participate in a peripheral war in Korea, which was not part of its global strategy, to demonstrate its national will and determination to resist aggression" (100:293). "The reason why we got involved in the periphery war, which was not part of our global strategy," noted Secretary of the Air Force Thomas Finletter, "is that the enemy came down right under our noses, where we had the greatest concentration of American military power outside the United States" (100:294). Despite intelligence supporting Communist China and Soviet involvement, President Truman resolutely held the war would be confined to Korean borders. "Every decision I made in the Korean conflict," he wrote (243:345),

had this one aim in mind: to prevent a third world war and the terrible destruction it would bring to the civilized world. This meant that we should not do anything that would provide the excuse to the Soviets and plunge the free nations into full-scale all-out war.

Elaborately vocalized by Secretary of Defense Louis Johnson, the UN forces served a single mission--a mission fully supported by the UN member nations and so documented in a 1950 UN Security Council resolution. Quite simply, UN forces were "to stabilize, to build up necessary equipment to go forward, and. . .to go forward to the thirty-eighth parallel" (100:296).

As the Soviet Union presumably gained atomic parity in the mid-1950s, the strategic mission of manned bombers remained America's primary defense for national security. Ironically, the USAF's parochial views of strategic bombing handicapped its ability to realize the traditional concept concerning the decisiveness of air power. Questioning such philosophical foundations, an analysis of the Combined Bomber Offensive of WWII described the theory of strategic bombing campaigns as ineffectual at best--the bombing was "gradual, cumulative, and during the course of the campaign . . .rarely was a single mission or series of missions decisive" (49:ix). Throughout the 1950s, USAF leadership, although endorsing a struggling missile program, was not committed to supplementing or augmenting the bomber force with ballistic missiles if it meant deemphasizing the status of an aerial bombardment strategy, if it undermined the

superior position of the manned bomber, or if it denigrated the priority in development of any "follow-on" manned bombers. General Curtis LeMay, commander-in-chief of the Strategic Air Command (SAC), in 1956, testified that the Inter-continental Ballistic Missile (ICBM) has a future of being a good weapons system but it will be less efficient than the manned bomber (100:510). A future USAF Chief of Staff, General Thomas White, echoed LeMay's skepticism: "To say there is not deeply ingrained prejudice in favor of aircraft among flyers would be a stupid statement" (100:504).

The end of the decade signaled the beginning of a new era and a new world for exploration. The Soviet launching of Sputnik, the world's first man-made object to orbit the earth, in 1957 sparked USAF leadership to seek and claim dominion over space. Air Force leaders, fighting to protect their future as a viable service in this new arena, circumvented any interservice argument by claiming space as USAF "territory." General White considered the air and space mediums as inseparable and, from an operational point of view, "manned aircraft, missiles, and piloted spacecraft are a single instrument. . . .Missiles are but an evolutionary step from manned aircraft to true piloted spacecraft. . . .designed to gain and hold a superior advantage in air and space" (260). General White further elaborated on future warfare, asserting a future war could

be most effectively fought with aerospace forces exhibiting extensive operational capabilities in a medium "undivided, unobstructed, and unlimited" (260). General White went on to say, "Whoever controls space will dominate the surface of the earth" (260).

US Aerospace Doctrine of the 1960s

The 1960s saw a subtle change in the doctrine of America's forces. With such a tremendous capability to target and destroy any location in the world in a matter of minutes, the philosophy adopted was the "come as you are war." Conventional readiness was readdressed. Because ICBMs could deliver nuclear warheads in a matter of minutes, and because it was evident both sides of the cold war possessed such capability, conventional readiness obtained immediate importance. Readiness was improved, redundancy was incorporated into many items of weaponry, and training was constantly accomplished--the military was destined to maintain a constant battle-readiness.

While delivering his inaugural address, President John F. Kennedy proclaimed, "We shall pay any price, bear any burden, meet any hardship, support any friend, oppose any foe to assure the survival and success of liberty" (192:287). From day one of his administration, the new president reaffirmed this nation's commitment to containment. He was determined to fix the "two fundamental flaws" in the US military posture: "the inadequacy of both

our strategic deterrent and our conventional capabilities" (141:74). President Kennedy called for a reassessment of US strategic doctrine in his first State of the Union address, proclaiming,

We must strengthen our military tools. . .in the past, lack of consistent, coherent military strategy. . .[has] made it difficult to assess accurately how adequate or inadequate our defenses really are. I have, therefore, instructed the Secretary of Defense to reappraise our entire defense strategy. (193:301)

So it was, in January 1961, President Kennedy appointed Secretary of Defense Robert McNamara to conduct a broad study and formulate an appraisal of America's defense strategy and capabilities, to include US strategic force requirements.

Heeding the advice of McNamara and others, President Kennedy's "New Frontier" would build military forces able to fight at all levels of conflict. President Kennedy proclaimed, "We are moving into a period of uncertain risk and great commitment. . .thus we must be able to respond with discrimination and speed to any problem at any spot on the globe at any moment's notice" (193:288). In order to achieve such a flexible response, US forces were designed to fight a total thermonuclear war, limited nuclear war, conventional war in Europe or Asia, or unconventional war anywhere in the world. A strategic doctrine of "flexible response" would provide non-nuclear alternatives to military force. The biggest fear was one of an inadvertent nuclear war--a war best avoided by relying more heavily on

conventional forces backed by strong, survivable nuclear forces. The primary objective of flexible response was to "maintain forces capable of meeting conventional threats so that the United States would not be faced with the choice of either using nuclear weapons or foregoing vital interests abroad because it lacked non-nuclear options" (141:76).

Although nuclear weapons would only be used as a last resort, the administration made it clear that under certain circumstances the US could be compelled to use nuclear weapons first. Referring to strategic nuclear weapons and a policy of flexible response, Secretary McNamara stated,

the first requirement for such a policy is clearly to maintain our nuclear strike power as a realistic, effective deterrent against Soviet initiation of major wars. . .our weapons must be hardened, dispersed, and mobile so that they can survive an enemy attack, and they must be equipped with the most sophisticated devices necessary to penetrate enemy defenses. (91:72)

The Kennedy administration came into power in the early 1960s and was quickly confronted with the Berlin Crisis, the Bay of Pigs operation, the Cuban Missile Crisis, and Soviet supported insurgencies in Africa, Latin America, and Southeast Asia. With so much tension in the world, it was evident the massive retaliation doctrine was not working in these limited conflicts. The US could not respond to such minor conflicts with nuclear weapons, and if it did, it now had to contend with Soviet retaliation--a force equally armed with a strategic bomber force and ICBMs. In recognition of its limitations, the US embarked on a policy

of flexible response. Strategic nuclear deterrence was still the mainstay of deterrence, but should it fail, the US should retain the ability to respond in one of four levels: general nuclear, tactical nuclear, conventional, and counterinsurgency.

Before the manifestation of the first test of flexible response, there came into being new thoughts in basic aerospace doctrine. The retirement of General Curtis LeMay marked the end of an era in the USAF. USAF Manual 1-1, United States Air Force Basic Doctrine, took the initiative to look forward, not backward. Older manuals of doctrine had asserted: "Basic doctrine evolves from experience and from analysis of the continuing impact of new developments" (101:235). USAF Manual 1-1 proposed: "Basic doctrine evolves through the continuing analysis and testing of military operations in light of national objective and the changing military environment" (101:235). The older manuals had maintained the USAF was "the primary aerospace arm of the United States," and "of the various types of military forces, those which conduct operations in the aerospace are most capable of decisive results" (101:235). The new USAF Manual 1-1 chartered, "Aerospace Forces are one part of a national military establishment maintained to support national policy objectives in our relations with foreign powers" (101:235). USAF leaders were eager to discard old disbeliefs that "there was any war which couldn't be won by

air power alone," but they correctly reasoned air power was "the supreme deterrent to general war" and "there was no war which could be won without air power" (101:235). Even with effective use of air power, some wars are not meant to be won.

Vietnam War. In December 1961, Secretary McNamara labeled South Vietnam as the "number one priority," and stated that other than a US troop commitment, it would receive whatever resources were needed (20:146). After careful investigation, the USAF reasoned the primary cause of the French defeat at Dien Bien Phu to have been "inadequate logistics support caused by. . .insufficient airlift" (20:120). The French failure at Dien Bien Phu had a significant impact on the troop-carrier doctrines which were developed, and upon the forces which were created to fight in Vietnam. For example, the C-123 and C-130 transport aircraft were developed and deployed with the capability for short-field assault landings, increased range, and heavy equipment airdrops (20:25).

Air Force Manual 1-9, the official USAF Doctrine for Troop Carrier Aviation, was published in 1954 and reigned unchanged until 1966 (halfway through the Vietnam War). The only experiences the doctrinal planners had to draw from were Korea and World War II. Although the doctrine was a bit nebulous in certain points, one area was clear--troop-carrier resources should be centrally controlled. This view

was in accord with USAF Manual 1-2, Basic Air Force Doctrine, which stated, "because of the inherent flexibility of the air weapon and its ability to concentrate effort, air forces should not be partitioned among different commands (73:17). Accordingly, troop-carrier forces in Vietnam reported directly to the theater air commanders, who were responsible to neither the ground force commander nor the tactical air commander (20:127).

The US took full advantage of its superior aviation technology in Vietnam. Tactical airlift, for example, was used to give the US Army Infantry mobility and staying power in its offensive battles against the Viet Cong. Airlift played a key role within this offensive strategy (20:653). The 1964 edition of USAF Manual 1-1, United States Air Force Basic Doctrine, officially acknowledged airlift as a function of airpower for the first time. The airlift mission in tactical nuclear operations was described thusly:

Performance of the airlift mission depends on the limits observed in the use of nuclear weapons. When opposed by a nuclear armed opponent, tactical airlift forces would require extensive dispersal and vertical or short take-off and landing capabilities. Strategic airlift could be operated from regular airfields with normal operating procedures as long as rear areas were not under attack. Under these conditions, required aircraft capabilities would be compatible with those of conventional warfare. However, in tactical nuclear operations without a nearby sanctuary, strategic airlift would require a large-scale increase in total aircraft to maintain an effective flow of supplies to dispersed locations. Centralized control of theater airlift under a theater airlift commander would provide most effective utilization of resources in support of joint operations. (72:4-3)

The airlift mission in conventional air operations was described as follows:

In conventional warfare, airlift contributes to rapid concentration of air and ground forces, and supply of tactical units in the field. In addition, long-range or strategic airlift participates in the support of heavy theater logistical requirements. Air superiority is required before effective airlift, and close control is necessary for the efficient utilization of tactical airlift. (72:5-2)

The airlift mission in counterinsurgency operations was described as follows:

Airlift provides quick reaction mobility and supply to ground forces, to enable them to rapidly achieve and maintain contact with insurgent units. Coordinated joint operations and centralized control are essential. In addition, leaflets, loudspeakers, and other psychological measures can be used from the air to produce defections from insurgent forces and provide guidance for the civil populace. (72:6-2)

No better example illustrates the newfound importance of airlift than the C-130 Hercules. The C-130 was far superior to any transport aircraft utilized in the Korean War. It was able, for example, to sustain large search and destroy operations by hauling units, their equipment, and tons of supplies into airstrips located near the combat zone. These airstrips were usually collocated with brigade headquarters, supply trans-shipment points, artillery fire bases, and helicopter refueling and rearming points. Forward air controllers would operate from those same airstrips, directing air strikes from fighter aircraft based in the rear. Army airmobile and infantry operations projected outward more than 30 miles in all directions. Using USAF

transport aircraft as the aerial line of communication for the forward mobile ground operations was the "foremost development of the war for airlift use" (73:653).

As 1961 drew to a close, communist activity in South Vietnam worsened--it had progressed from insurgency into at least 'sublimated war'" (101:259). By mid-1962, many senior USAF officers supported the notion that air strikes against targets in North Vietnam would be required to bring about an end to the war in South Vietnam. In 1963, most US commanders felt sure that the war was rapidly expanding into a conventional conflict (187:12). In 1964, the Joint Chiefs of Staff agreed that US involvement was unavoidable if South Vietnam were to be saved. The method of intervention, however, posed differences of opinion. Nevertheless, most were in agreement that there should be concentrated air attacks against targets in the heart of North Vietnam. "Rolling Thunder" was the first continuous, systematic air campaign initiated against the heartland of North Vietnam. Such bombing of North Vietnam was always "intended as a supplement to and not a substitute for the military operations in the South" (101:260). Rolling Thunder was designed to be a "fast/full squeeze," hard-hitting campaign against air targets. Among the basic targets, airfields, lines of communication, military installations, industrial installations, and armed reconnaissance routes received the most attention (187:19). US combat troops were ordered to

Vietnam in the summer of 1965. By May 1966, the build-up and preparation of US forces was complete. Planned offensives, utilizing America's greater mobility and firepower, were unleashed primarily against the Viet Cong and southern deployed North Vietnam units. Reconnaissance aircraft and intelligence agencies located targets utilizing a seeking, locating, annihilating, and monitoring (SLAM) concept. B-52 bombers flown out of Guam, accompanied by tactical air strikes and coordinated artillery, usually triggered the attack. SLAM was a most valued and responsive tool. In the summer of 1967, a communist return to protracted guerrilla warfare was expected. Wrongly so. Instead, Hanoi would "go-for-broke" with a three-phased strategy. Phase I involved "set-piece battles mounted from sanctuaries with concentrated units drawing American forces away from populated areas" (101:261). Phase II would see concentrated communist attacks throughout South Vietnam in an attempt to disintegrate South Vietnam's forces and stimulate a possible civilian revolt (101:261). Phase III "would culminate in a great conjoined battle at a place most favorable for a major communist victory" (101:261). Psychological warfare and politics would also play a major role in such an offensive, always holding at bay the hope for a political settlement of the conflict (205:124-126). In January 1968, the North Vietnamese launched a diversionary attack against a US defense position at Khe

Sanh while simultaneously unleashing some 84,000 troops in a surprise Tet offensive against major South Vietnamese cities, towns, and major installations. But South Vietnam did not collapse and civilians did not revolt. Instead, US Army General Westmoreland concluded "the key to our success at Khe Sanh was firepower, principally aerial firepower" (192:105). The "reality of the 1968 Tet offensive was that Hanoi had taken a big gamble and had lost on the battlefield, but they had won a solid psychological victory in the United States" (225:214-218). In July 1969, President Nixon drew a broad outline of long-range policy that became known as the Nixon Doctrine. In brief, the president promised "the US would keep its treaty commitments, would provide a shield if a nuclear power threatened an allied nation or one whose survival was vital to US security, and would furnish military and economic assistance in accordance with treaty commitments" (101:264). The caveat was this: the US sternly expected the threatened nation to assume primary responsibility of providing manpower for its defense (101:264). All was not peaceful as the decade came to a close. North Vietnamese attacks continued to penetrate South Vietnam. Rocket attacks into Saigon became common-place. American casualties exceeded 400 per week. B-52 attacks into Cambodia in 1970 amounted to almost 4,000 sorties dropping in excess of 100,000 tons of ordnance (101:264).

US Aerospace Doctrine of the 1970s

When truce negotiations in Paris (begun in 1968) appeared to take a turn for the better in October 1972, the US ceased bombing above the 20th parallel. But it was not long before communist delegates obstructed negotiations. Hanoi became the target of very heavy air strikes attributed to "Linebacker II." The first warning order for Linebacker II "was issued on 15 December 1972, and the 11-day air campaign ran from 18 to 29 December, with a brief pause for Christmas Day" (101:270). The attacks continued relentlessly. Targeting emphasized transportation-related targets and military supply storage. Targets were restricted to valid military objectives only. Unmanned photo reconnaissance aircraft revealed extremely good bombing accuracy. During Linebacker II, "15 B-52s, 2 F-4s, 2 F-11s, and 1 A-7 were lost by the USAF, and the US Navy lost six aircraft" (101:270). As the strikes drew to a close, communist supplies of antiaircraft missiles were virtually depleted. Admiral Moorer summed up the campaign this way:

The 11-day air campaign of December 1972 will, I am certain, go down in history as a testimonial to the efficacy of airpower the way it should be used--it constituted the use of joint forces in a skillfully coordinated effort the way they should be used. Its success was due to our airmen's qualities of professionalism, skill, dedication, and raw courage in their highest tradition. (101:270)

If Linebacker II contributed to North Vietnam's eagerness to sign the Paris Agreement, it was equally true that airpower

was probably decisive in prompting North Vietnam's agreement to generally unfavorable truce terms.

Nevertheless, with the United States' withdrawal from South Vietnam and the subsequent fall of the South Vietnamese government, the US experienced for the first time a complete failure to accomplish its national security objectives through the use of applied military force (90). This was a war that saw five presidents, the ebb and flow of public opinion and, finally, total American disengagement. Historians may document Vietnam as a conflict in which military operations were subordinated to limited political objectives under the concept of military containment of Communism. The dilemma in a limited war is that while it may diminish the prospects of nuclear war and provide a feasible means of conflict containment, it also harbors the capacity to erode American patience, promote social and political discord, and seriously disturb American confidence that power can vanquish an enemy with dispatch. With America's experience in Vietnam serving as a backdrop, some have postulated that if America's military is ever again committed to a limited war, it will be fought in such a manner so as to maintain sufficient public support to obtain a viable political base. A future Vietnam

is more likely to last seven weeks than seven years. The United States will probably be slower to resort to force in the future than it has been in the past, but when it does, it will apply overwhelming force in order to achieve its objectives quickly and decisively. The emphasis will be on limiting the means. In this sense,

future aggressors may well end up paying part of the cost of the failure of the United States military strategy in Vietnam. (109:21-22)

In the spring of 1973, US combat forces were removed from Vietnam, and American prisoners of war were being returned to the US. Congressional support, as well as the will of the people to continue US participation in Southeast Asia was diminishing. By that summer, President Nixon would point out:

Vietnam was lost not because of a lack of power, but because of a failure of skill and determination at using power. Those failures caused a breach in public trust and led to a collapse of our national will. Finally, the presidency was weakened by the restrictions Congress placed on the President's war-making powers and by the debilitating effects of the Watergate crisis. (101:272)

By April 1985, under the leadership of President Gerald Ford, Americans were evacuated from Saigon.

In retrospect, it appeared the Vietnamese armed forces always believed the US would employ its air power against a 1975 North Vietnamese invasion--much the same way it had done in 1972. Had the US done just that, one commentator suggests, "the USAF could have destroyed the North Vietnamese Army as a fighting force for the next five or ten years. They did not because of the political atmosphere in the United States" (101:276). Lt General Elwood Quesada, while reflecting on the US military organization in Southeast Asia, regretfully pointed out that official doctrine was not necessarily binding. "Doctrine," he said,

is awfully fine but doctrine is nothing more than a whole group of words. A lot depends on the personality of the people who are implementing doctrine. . . .You can have all the doctrine you want, but unless you have people, commanders, to implement those doctrines, you might as well throw your doctrines away. (153:69-72)

Several years after the Vietnam War, Secretary of Defense Caspar Weinberger offered a final critique. In part, he said,

The problem was we didn't want to win that war. We never intended to win that war. And that is what infuriates me so much about hearing how America lost that war. . . .No matter what firepower superiority we assembled, we were never able or in effect allowed to use it, because there was no intention ever to win that war. And that is the worst kind of situation you could ever get into. . . .If it isn't important enough to win, it is not important enough to be there. (101:276)

US Aerospace Doctrine of the 1980s

In the foreword to the March 1984 Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force, USAF Chief of Staff General Charles Gabriel stated "the US Air Force is the primary aerospace arm of our Nation's armed forces" (69:iii). He was careful to point out the Air Force's basic doctrine not only describes how America would use aerospace forces to meet the threats and challenges of the current day, but how those forces also serve as the "point of departure for guiding our Nation's aerospace arm in meeting the challenges of tomorrow" (69:iii). "Aerospace power," General Gabriel proclaims, "is, and will continue to be, a critical element in protecting our Nation and deterring aggression" (69:iii).

The 1970s found the US Armed Services so obsessed with a war that it had fought so long in Vietnam that it forgot the challenges it faced in central Europe and elsewhere in the world. The future, it appeared, bode unwelcomed news. The post-Vietnam era bore ill omens in the form of steadily declining defense budgets, and the neglect of anticipated force improvements. In 1982, a new warfighting doctrine was proclaimed. Because of its emphasis on the full three-dimensional nature of modern battle (two land dimensions plus air warfare), it represented an important shift from the traditional emphasis on tactics to a more operational focus involving the rapid movement of men and materiel and the avoidance of decisive confrontations with the enemy (136). Dubbed AirLand Battle Doctrine, it emphasizes the future role of sophisticated technology as a key element in the modern approach to battle. Fundamentally, the doctrine is based on the commonly accepted notion that the common denominator for all future warfare, even in the Third World, will be an unprecedented potential for destruction and an increased tempo of events (227:1).

AirLand Battle represents an attempt to achieve a balance between the factors of maneuver and firepower, the mix of nuclear and conventional tactical weapons, high technology and modern concepts of logistics, and finally, though perhaps implicitly, the division tendencies naturally present between member states in any coalition. Some argue

that, in its essence, the doctrine is merely a return to the fundamental principles of war (226). Briefly, the principles of war as listed in US Army Field Manual 100-5 are objective, offensive, mass, economy of forces, maneuver, unity of command, security, surprise, and simplicity (80).

The lineaments of AirLand doctrine derive not only from the lessons of past campaigns and battles, but also from an examination of today's world situation. The Soviets, since World War II, have concentrated their thinking on mobile operations. Unsurprisingly, this "attitude" is reflected in the current structure of their armed forces. The Soviets believe they must act quickly and decisively to bring the war with the West to a rapid conclusion. This is to be achieved, in large part, by the introduction of highly mobile forces and sophisticated command and control. In response, the AirLand doctrinal concept attempts to solve the problem of Soviet mobility by developing operational guidelines allowing for a correspondingly greater Allied mobility. Such a concept places a great deal of emphasis on air assault. In addition, AirLand Battle has the following principal characteristics: operational art and maneuver warfare, decentralized execution of mission orders, integrated battle, extended battlefield (both in space and time), and reliance on new technology (227:11). In turn, these characteristics express the following four basic principles:

initiative is the ability to set the terms of battle by action. . .depth refers to time, space, and resources . . .agility means acting faster than the enemy to exploit his weaknesses and disrupt his plans. . .[and] synchronization combines economy of force and unity of effort so that no effort is wasted. . . (80:7-2)

Essential to fighting battles in an integrated fashion is having a clearly stated objective and unity of command.

Another tenet of AirLand Battle is the notion that numerical advantage alone does not suffice to determine the outcome of war. AirLand Battle places great weight on the fact that weapons and numbers are only as good as the commanders who can direct their use, the validity of their advance planning, the quality of their staff work, and the willingness of soldiers, who constitute their quantity, to carry them out.

US Aerospace Doctrine in the 1990s

Our strategy to go after this army is very, very simple. First, we're going to cut it off, and then we're going to kill it. . . .We have a tool box that's full of lots of tools, and I brought them all to the party. (10:26-27)

As he outlined the battle plan against the Iraqi military, Chairman of the Joint Chiefs of Staff, Army General Colin Powell, sounded like "a dispassionate surgeon describing the procedure for removing a particularly noxious growth" (10:26).

As the United States begins the last decade of the 20th century, the basic goals of US national security policy remain essentially unchanged since the late 1940s (58:27):

1. To preserve the independence, free institutions, and territorial integrity of the United States;
2. To preserve US and allied vital interests abroad;
3. To shape an international order in which America's freedoms and democratic institutions can survive and prosper--an international order in which states coexist without the use of force and in which citizens are free to choose their own governments.

America's national strategy since World War II to achieve these goals was containment to avoid Soviet expansion into areas vital to US interests. The basic defense strategy to implement containment was deterrence. Deterrence meant that Americans seek to protect their vital interests by being strong,

not to enable the US to resort to aggression or war, but to prevent war by that very strength--the cost to any adversary of attacking the US will far exceed any gain they could hope to achieve. (58:8)

Deterrence is the core of America's defense strategy today, as it has been for most of the post-World War II period. The focus of the post-WWII military concept of deterrence has largely centered on the Soviet Union. But, in view of today's interdependent economic structure, the notion of deterrence has come to include maintaining a secure environment within which the US and its friends and allies can pursue legitimate interests. In the future, the US may find itself increasingly vulnerable in a military conflict not directly involving the Soviet Union. Not because the cold war is over, but more because America's interests are expanding. America is becoming increasingly resource dependent in areas not necessarily challenged by

the Soviet Union (as demonstrated by US forces deployed to the Persian Gulf in 1990-91 in support of Operation Desert Shield). One must bear in mind no nation has unlimited resources and, therefore, each nation must learn to work within the constraints imposed by those limitations. That being the case, and realizing many of those necessities must be obtained from international sources, it becomes self-evident not all suppliers of those goods shall always remain friendly or cooperative. To contend with that dilemma, a strategic stockpile of selected minerals, although recently neglected, was enacted through congressional legislation. Of the 36 non-fuel minerals declared essential to America's industrial base, 22 are primarily dependent on foreign sources (200:289) (See Table 6).

TABLE 6

Net Import Reliance on Selected Nonfuel Minerals

<u>Mineral</u>	<u>US Dependence (Percentage)</u>	<u>Major Sources</u>
Columbium	100	Brazil, Canada, Thailand
Manganese	100	Republic of South Africa, France, Brazil, Gabon
Mica (sheet)	100	India, Belgium, France
Strontium	100	Mexico, Spain
Bauxite & Alumina	97	Australia, Jamaica, Guinea, Suriname
Cobalt	95	Zaire, Zambia, Canada, Norway
Platinum Group	92	Republic of South Africa, United Kingdom, USSR
Tantalum	92	Thailand, Brazil, Malaysia, Australia
Potash	77	Canada, Israel
Chromium	73	Republic of South Africa, Zimbabwe, Yugoslavia, Turkey
Tin	72	Thailand, Malaysia, Bolivia, Indonesia
Asbestos	72	Canada, Republic of South Africa
Barite	69	China, Morocco, Chile, Peru
Zinc	69	Canada, Peru, Mexico, Australia
Nickel	68	Canada, Australia, Botswana
Tungsten	68	Canada, China, Bolivia, Portugal
Silver	64	Canada, Mexico, Peru, United Kingdom
Mercury	57	Spain, Algeria, Japan, Turkey
Cadmium	55	Canada, Australia, Peru
Selenium	54	Canada, United Kingdom, Japan, Belgium, Luxembourg
Gypsum	38	Canada, Mexico, Spain
Gold	31	Canada, Uruguay, Switzerland
Copper	27	Chile, Canada, Peru, Mexico
Silicon	23	Brazil, Canada, Norway
Iron Ore	22	Canada, Venezuela, Liberia
Iron & Steel	22	European Economic Community, Japan, Canada
Aluminum	12	Canada, Japan, Ghana
Nitrogen	8	USSR, Canada, Trinidad, Tobago, Mexico
Sulfur	5	Canada, Mexico

Source: (247)

However, USAF planners are considering changing the service's combat doctrine to adapt the sudden and overwhelming strategic air campaign used so successfully in the Persian Gulf War for future military operations. The new doctrine, "hyperwar," would call for air forces to bombard air defense networks, telephone systems, electrical generating plants, and other targets normally located deep in enemy territory. The idea is "to achieve near-instantaneous paralysis of the enemy's war-fighting capabilities" (7). The concept awaits official review but certainly Desert Storm demonstrated the idea's viability.

Many would contend the conflict in the Persian Gulf is certain to become a model for decades to come. Colonel John Warden, USAF deputy director for war-fighting concepts, insightfully suggests Desert Shield/Desert Storm "has established the model for operations above the guerrilla level for the next quarter century" (7). Colonel Warden is not alone in advocating the offensive operational doctrine embodied by the hyperwar concept. Edward Luttwak, an analyst for the Center for Strategic and International Studies, agrees that Desert Shield/Desert Storm "marks a true turning point. What happened in Desert Storm was not a fluke" (7). Luttwak goes on to say "the Persian Gulf War demonstrates that air power has finally come of age after 70 years of over-promising" because technological advances have enabled air forces to apply force decisively in large-scale

conventional wars (7). Most notable are the advances in stealth technology and precision guidance systems for aerial-delivered munitions. According to Warden, "Stealth returns genuine tactical and operational surprise to warfare, and precision enables [the US] to destroy virtually every critical strategic node with only a few sorties" (7). Warden, with one final note, says "the offense has been returned to a primary place in military operations, and that revolution has occurred in a conceptual way as much as a technological one" (7). Lieutenant Colonel Michael Gannon, an USAF spokesman at the Pentagon, puts all of this into perspective by pointing out lessons from the Persian Gulf War have not yet been thoroughly formulated and incorporated into any decisions to change current operational doctrine. Nevertheless, he is sure "some things will change" (7).

With the cease-fire in Desert Shield/Desert Storm, three principles of air war are immediately clear:

- * air superiority is indispensable to victory in modern war;
- * all forces that fight in the air require a single, unifying command and control authority if they are to take fullest advantage of their capabilities; and,
- * advanced technology, coupled with realistic training wins wars. (116)

Gaining control of the aerospace environment is the first consideration in employing aerospace forces (69:1-3).

Aerospace is the "total expanse beyond the earth's surface; it is the multidimensional operating environment where Air Force forces can perform all of their missions" (69:2-2).

Air superiority in the Persian Gulf War was accomplished in a matter of hours, and air supremacy in a matter of days. As a result, coordinated air assaults smashed command and control, air defense logistics and weapons systems, and surface to air defense systems.

Critical for the air victory and its contribution to the overall triumph was the unified command of air assets. Aerospace power was "employed as an indivisible entity" (116). Unlike Vietnam's unchoreographed escapade of service-oriented autonomy, Desert Shield/Desert Storm flew all air forces, including those of allied nations, from a single air tasking order.

A final tenet of Air Force doctrine is the drive to keep its force structure on the leading edge of technology and to train realistically. The time has gone where trucks represent tanks, broomsticks equate to rifles, and telephone poles are far-flung replications of artillery pieces as in US Army maneuvers in 1939-40. Although technology and realistic training cost many dollars, the cost is pale in comparison to the cost of doing business any other way. The success of Desert Shield/Desert Storm clearly demonstrated that high technology, when combined with demanding, realistic training, pays off handsomely. In essence, Desert Shield/Desert Storm has confirmed USAF doctrine: Build the best technology, train hard, employ all air forces indivisibly, and set as the first goal command of the skies.

Summary

If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself, but not the enemy, for every victory gained you will also suffer defeat. If you know neither the enemy nor yourself, you will succumb in every battle. (266:51)

"In the 'old days,' we knew where the enemy was," as one US Army official said with a trace of nostalgia that seems a bit odd when one realizes he was talking about 1989 (25:10). The soldier referred to the cold war of bygone days. In the "old days," deterrence meant the containment of Soviet expansion. Deterrence has a new ring for the 1990s. For example, amid the storm over Iraq's invasion of Kuwait, the US House and Senate fought over the fate of a major new weapons system (the Stealth B-2 Bomber) while President Bush announced cuts in US military troop strength. "Our forces can be smaller," President Bush declared, proposing that one-fourth of the 2.1 million servicemen and women currently on active duty be cut from the force by 1995 (9). This troop cut announcement is a small player in a far-reaching reassessment of US military strategy. It reflects what President Bush described as "a world less driven by an immediate threat to Europe and the danger of global war" (9).

The Soviet military and civilian leadership are currently in the midst of an in-depth and, perhaps, painful study of America's overwhelming AirLand Battle execution in Operation Desert Storm. It is certain there are some who

wonder whether the US is capable of mounting another level of effort like that of Desert Storm. If for no other reason than this, America's leadership must take this opportunity to make certain the US remains at least two steps ahead of its potential adversaries. Americans, in general, should recognize their great achievements while, at the same time, being careful to adequately prepare for the next opportunity to excel--it is certain the Soviets are doing just that!

References Cited in Chapter Four
(Numbers refer to Citations and Master Bibliography Listing)

7. Anderson, Casey. "Hyperwar Success May Alter AF Doctrine," Air Force Times, 51: 24 (April 22, 1991).
8. Arnold, Henry H., General, USA. Global Missions. New York: Harper & Brothers, 1949.
9. Auster, Bruce B. "Choose Your Own Weapon," US News and World Report, 109: 47 (August 13, 1990).
10. Auster, Bruce B. "In the Footsteps of Two Georges," US News and World Report, 110: 26-27 (February 4, 1991).
20. Bowers, Ray L. Tactical Airlift. Washington DC: Office of Air Force History, 1983.
25. Budiansky, Stephen. "A Messy, Dangerous World," US News and World Report, 109: 10-11 (August 13, 1990).
39. Chandler, Charles DeForest, and Frank P. Lahm. How Our Army Grew Wings. New York: Ronald Press Company, 1943.
43. Clausewitz, Karl von. On War. Washington DC: Infantry Journal Press, 1950.
49. Craven, Wesley Frank, and James Lea Cate, editors. "Torch to Point-Blank," The Army Air Forces in World War II, vol 2. Chicago, The University of Chicago Press, 1949.
52. Dann, Richard R. "Strategic Air Command," Air Force Magazine, 29: 35-36 (August 1946).
58. Department of Defense. Annual Report of the Secretary of Defense to the Congress, for the Fiscal Year 1987. Washington DC: Government Printing Office, 1986.
60. Department of Defense. Dictionary of Military and Associated Terms. JCS Publication 1. Washington DC: Joint Chiefs of Staff, Government Printing Office, April 1984.
69. Department of the Air Force. Basic Aerospace Doctrine. AFM 1-1. Washington DC: Government Printing Office, 16 March 1984.

72. Department of the Air Force. United States Air Force Basic Doctrine. AFM 1-1. Washington DC: Government Printing Office, 1964.
73. Department of the Air Force. United States Air Force Basic Doctrine. AFM 1-2. Washington DC: Government Printing Office, 1 April 1953.
80. Department of the Army. Operations. FM 100-5. Washington DC: Government Printing Office, May 1986.
90. Elowitz, Larry, and John W. Spanier. "Korea and Vietnam: Limited War and the American Political System," ORBIS, 18: 510-527 (Summer 1974).
91. Endicott, John E., and Roy W. Stafford, Jr. American Defense Policy. Baltimore MD: John Hopkins University Press, 1978.
95. Finney, Robert T. History of the Air Corps Tactical School, 1920-1940, historical study 100. Maxwell AFB AL: Research Studies Institute, 1955.
100. Futrell, Robert Frank. Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907-1960, volume I. Maxwell AFB AL: Air University Press, 1989.
101. Futrell, Robert Frank. Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984, volume II. Maxwell AFB AL: Air University Press, 1989.
103. Gates, Bryon E., Brigadier General, USA. Chief, management control, Army Air Forces. The Air Forces in Theaters of Operations: Organization and Functions. Washington DC: Government Printing Office, 1943.
107. Goldberg, Alfred, editor. A History of the United States Air Force, 1907-1957. Princeton NJ: D. Van Nostrand Company, Inc., 1957.
109. Goodpastor, Andrew J., and Samuel P. Huntington. Civil-Military Relations. Washington DC: American Enterprise Institute for Public Policy Research, 1977.
112. Gorell, Edgar S., Colonel, USA. The Measure of America's World War Aeronautical Effort. Burlington VT: Lane Press, 1940.

116. Gropman, Alan. "Success in Persian Gulf Validates Air Force Doctrine," Air Force Times, 52: 23 (March 18, 1991).
131. Hurley, Alfred F., Major, USAF. Billy Mitchell, Crusader for Air Power. New York: Franklin Watts, 1964.
135. Huston, James A. The Sinews of War: Army Logistics 1775-1953. Washington DC: Department of the Army, Office of the Chief of Military History, 1966.
141. Kahan, Jerome H. Security in the Nuclear Age. Washington DC: The Brookings Institute, 1975.
153. Kohn, Richard H., and Joseph P. Harahan, editors. Air Superiority in World War II and Korea: An Interview with Gen James Ferguson, Gen Robert M. Lee, Gen William Momyer, and Lt Gen Elwood R. Quesada. Washington DC: Office of Air Force History, 1983.
182. Millis, Walter, editor. The Forrestal Diaries. New York: Viking Press, 1951.
185. Mitchell, William, Brigadier General, USA. Memoirs of World War I. New York: Random House, 1960.
186. Mitchell, William, Brigadier General, USA. Our Air Force. New York: E.P. Dutton & Company, 1919.
187. Momyer, William W. Airpower in Three Wars. Washington DC: Government Printing Office, 1978.
188. Mooney, Chase C. Organization of the Army Air Arm, 1935-1945, historical study 10. Maxwell AFB AL: USAF Historical Division, 1956.
192. Nalty, Bernard C. Air Power and the Fight for Khe Sanh. Washington DC: Office of Air Force History, 1973.
193. Nathan, James A., and James K. Oliver. United States Foreign Policy and World Order. Boston: Little, Brown and Company, 1976.
195. Norris, John G. "Airpower in the Cold War," Air Force Magazine, 31: 25-26 (September 1948).
200. Peppers, Jerome G., Jr. Military Logistics: A History of United States Military Logistics 1935-1985. Huntsville AL: Logistics Education Foundation Publishing, 1988.

205. Pike, Douglas. War, Peace, and the Viet Cong. Cambridge: Massachusetts Institute of Technology Press, 1969.
216. Romjue, John L. "The Evolution of the AirLand Battle Concept," The Air University Review, 36: (May/June 1984).
225. Sharp, U.S. Grant, Admiral, USN. Strategy in Defeat, Vietnam in Retrospect. San Rafael CA: Presidio Press, 1976.
226. Sinnreich, Richard Hart. Military Strategy in Transition, Studies in International Security Affairs and Military Strategy. Boulder CO: Westview Press, 1984.
227. Skinner, Douglas W. AirLand Battle Doctrine. A professional paper for the Center for Naval Analysis. Alexandria VA: September 1988.
241. Terry, Michael R. "Formulation of Aerospace Doctrine from 1955 to 1959," Air Power History: 47-54 (Spring 1991).
243. Truman, Harry S. Years of Trial and Hope. Garden City NY: Doubleday & Company, 1956.
247. U.S. Bureau of the Mines. Net Import Reliance on Selected Nonfuel Minerals. Table, 1985.
260. White, Thomas D. "Air and Space are Indivisible," Air Force Magazine, 41: 40-41 (March 1958).
266. Wu, Sun Tzu. The Art of War. Harrisburg PA: The Military Service Publishing Company, 1957.

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V. History of Soviet Military Doctrine

Chapter Overview

Chapter IV briefly outlined and summarized American aerospace doctrine over the past 85 years. This chapter is intended to expand on the history of military doctrine from a Soviet perspective. A brief, historical synopsis of Soviet military doctrine is designed to provide a backdrop for recent events sweeping the globe. Particular emphasis will be given to the effects of Mikhail Gorbachev's process of perestroika.

Soviet Military Doctrine from 1917-1960

Vladimir I. Lenin seized on Clausewitz's definition of war, modifying it thusly:

War is a continuation of policy by other means. All wars are inseparable from the political systems that engender them. The policy which a given state, a given class within that state, pursued for a long time before that war is inevitably continued in that same class during the war, the form of action alone being changed. (161:25)

The Soviet Union has been occupied by a foreign power as recently as World War II and invaded several times before in its history. Soviet losses incurred in World War II, alone, both military and civilian, approached 20 million people (222:17). Because of its history of wars, especially World War II, Soviet leaders have resolved the only effectual method of prevailing in a future large-scale conflict lies in the security of a highly prepared standing army backed by a supporting national strategy. In the Soviet Union, action

follows doctrine--it maintains an offensive character (222:73). According to the regulations reflected in the Provisional Field Regulations of the RKKA [Red Army] for 1936 (PU-36), "only a decisive offensive in the main direction [of the attacking enemy] followed by relentless pursuit will lead to complete destruction of the enemy's men and equipment" (222:13).

Lenin has been credited with establishing the foundations of Soviet military doctrine and military science (137:18). Mikhail V. Frunze, a hero of the Civil War of 1917, built upon Lenin's humble beginnings. In particular, Frunze stipulated that military doctrine had two parts: political and technical (99:28). The technical side would be concerned with the training and educating of military personnel, armed forces organization and structure, and the methods of solving combat problems (99:29). The political side, on the other hand, would deal with the relationship of the armed forces

with the development of the overall structure of state life, which defines the social environment in which military work must be conducted and the nature of military missions which may be assigned. (99:29)

Prior to the twentieth century, Frunze explained, "wars might have involved but a small segment of the population and only a part of the total resources of the state" (99:12). Under the conditions of the 1920s, he continued, "a future war would demand multimillion-man armies. . . [utilizing] the entire resources of a nation" (99:12).

Frunze realized that an overall plan, based upon strict coordination of leaders, must be administered while the war is in progress. His concept, expressed years later by Soviet military leaders as military doctrine, was expressed as follows:

The state must define the nature of overall and, in particular, military policy beforehand, designate the possible objects of its military intentions in accordance with this policy, and develop and institute a definitive plan of action for the state as a whole, one that would take account of future confrontations and ensure their success by making prudent use of the nation's energy before they take place. (99:28)

According to Frunze, the armed forces must be effectively organized to accomplish the general tasks levied by the state. They "must be united from the top down by common views on the nature of the missions themselves and on the means for carrying them out" (222:6).

The second stage in Soviet military doctrine began with the first Five-Year Plan in 1929. An industrial base, in direct support of the Soviet Union's Red Army, was being built. A necessity for leadership to come to agreement on military doctrine and strategy was mandated before weapons could be produced. The leaders had to determine the possible character of a future war, the methods and forms of its conduct, and

scientifically resolve questions of the organizational structure of the army and navy and determine the direction for the preparation of the country for waging war against a coalition of imperialist states. (137:41)

Soviet theorists began to develop a new theory of battle in the late 1920s--it came to be known as the Theory of Deep Operation for several reasons. To begin, the introduction of the machine gun had made trench warfare the primary method of fighting thereby giving defense the upper hand. Therefore, the apparent objective of a future conflict would be to avoid positional warfare and restore maneuverability to the battlefield. Two new, and promising, weapons--the tank and the airplane--came onto the scene during World War I, serving to enhance such an objective of maneuverability. "Deep Operation" became imbedded in military doctrine. Therein, another doctrinal change--the Soviet Union should attempt to achieve superiority in the three decisive weapons needed: tanks, artillery, and aircraft.

The third stage, centered around World War II (Soviets refer to it as the Great Patriotic War), found the Soviet Union discarding its military doctrine and implementing new military strategy to redirect the war Germany's Adolf Hitler launched against them. Stalin's direct leadership in matters of military strategy, combined with the loss of top Soviet officers purged in the late 1930s, had an adverse affect on the Red Army. From May 1937 through September 1938, "nearly half the regimental commanders, almost all brigade and division commanders, all corps and military district commanders and their political officers, and many instructors at military schools and academies underwent

repression" (222:15-16). In 1941, at the time of Hitler's invasion, the effects of Stalin's purges were most severely felt. Barely seven percent of Soviet officers had higher military education, at least 37 percent did not even have the full course of instruction at a military school, and only a small minority had any knowledge of German tactics and strategy (222:16). Stalin smothered military thought with his monopoly on the right to develop military science (222:17). His thesis of "permanently operating factors" became dogma--concepts earlier worked out were commonly rejected. Five permanently operating factors, listed below, were accepted as the final and unquestioned authority until Stalin's death in March 1953. Only within the framework of these five factors could any discussion of war by Soviet strategists be accomplished (233:79-82):

- * Stability of the rear;
- * Morale of the troops;
- * Quantity and quality of divisions;
- * Armaments of the army; and,
- * Organizational ability of army command personnel.

Stalin's role throughout World War II and immediately thereafter, as well as the significance of his leadership during the same period was, as a whole, conveniently exaggerated. For example, Colonel Chuvikov, in 1949, wrote,

Our historic victory over the enemy, which led to the unconditional surrender of Hitler's Germany and imperialist Japan, was the triumph of Stalin's military science. . . . Comrade Stalin developed and in the course of the [Great Patriotic War] put into action the thesis of permanently operating factors which determine the fate of the war. (Emphasis added) (222:19)

"Quantity and quality of divisions," the most important permanently operating factor, was the historically documented means the Soviets used to "keep score" of their progress against the German army (222:19). In considering the percentages of personnel in each branch of the Red Army during the period 1941-1945 (See Table 7), the decisive element in winning the war was the Ground Forces, measured in divisions (222:19). As such, all other services were obligated to follow their lead. It was many years after Stalin's death before the concept of military doctrine was revitalized. In fact, General Ivanov stated in his 1969 article on "Soviet Military Doctrine and Strategy," that until the availability of nuclear weapons, Soviet military doctrine and strategy developed on the basis of the experience of the war (137:43).

TABLE 7

Percentage of Red Army Personnel
(1941 - 1945)

Ground Forces	80.7 - 87.2%
Air Forces	6.2 - 8.7%
Navy	4.5 - 7.3%
National Air Defense	3.3 - 4.8%

(222:19)

After Stalin's death in 1953, the Soviet Union found itself confronting several international, as well as

domestic, dilemmas. To begin, Stalin's burial was not to be distracted by something as trivial as turmoil in a distant "satellite"--North Korea. The Korean War was in its third year and posed little danger to the Soviet Union. So, Moscow directed the North Korean leadership to reach a peace settlement thereby slowly bringing the war to a close. Closer to home, Marxism-Leninism had posited that as long as "imperialism" exists, war is inevitable (41:158).

A philosophy that advocates world revolution almost automatically makes the probability of war quite high. It also raises the question of how a nation's leaders can champion peace and fight war at the same time. (222:20)

With Soviet prestige facing a severe decline abroad, Nikita Sergeevich Khrushchev, successor to Stalin, launched a political offensive with the meeting of the 20th Communist Party of the Soviet Union (CPSU) Congress Meeting in 1956. He declared,

war is not fatalistically inevitable. Now there are powerful social and political forces which have formidable means at their disposal to prevent the imperialists from unleashing war, and if they do try to start one, to give a crushing rebuff to the aggressors and frustrate their adventuristic plans. To do this, it is necessary that all forces opposing war be vigilant and mobilized so that they can act with a united front and not weaken their struggle to preserve and consolidate peace. (144:11)

The thesis posed by Marxism-Leninism, he explained, was right for that period. After World War II, however, the world socialist system emerged and grew in power. Under these conditions, Khrushchev continued (41:156),

Lenin's thesis that as long as imperialism exists, the economic base for predatory wars is preserved, remains in force. As long as capitalism exists, reactionary forces representing the interests of capitalist monopoly will seek military adventures and aggression; they will try to unleash war. Therefore, constant vigilance is needed.

Khrushchev's secret speech behind closed doors spurred a revolution in military affairs between 1953 and 1960. The 20th Congress was reminded of Lenin's principles of peaceful coexistence of states with different social systems. The Soviet Union defines peaceful coexistence as "a special form of class warfare between socialism and capitalism in the international arena, but a specific form" (222:21). This revolution in military affairs, as interpreted by the 1986 Military Encyclopedic Dictionary, is defined as

the fundamental changes which are taking place under the influence of scientific-technical progress in the development of means of armed combat, in the organization and preparation of the armed forces, and of methods of conducting war and military actions. The present-day revolution in military affairs began after World War II in connection with the equipping of the armed forces with nuclear weapons, radioelectronic equipment, automatic control systems and other new means. It simultaneously encompassed all areas of military affairs. The results of the revolution in military affairs are used in capitalist countries for preparing for war, in socialist countries--for averting war and defending the socialist fatherland. (222:22)

Marshall of the Soviet Union Vasilii Sokolovskiy, the prime mover in bringing the Soviet armed forces into the nuclear age, was also "primarily responsible for setting the stage for the next formulation of military doctrine" (222:23).

Discussions of the role of nuclear weapons were conducted widely. Some of the main problems examined included the following (222:24):

- * how to stall a surprise attack by an aggressor;
- * how to train troops; and,
- * how to conduct modern battles and operations.

In December 1959, as a result of these and other deliberations, the Soviet armed forces were reorganized to create a new, fifth service--the Strategic Rocket Forces. Hence, the birth of a new military doctrine was publicly revealed for the first time by Nikita Khrushchev in January 1960 (222:25).

Soviet Military Doctrine of the 1960s

Although Soviet military doctrine of the 1960s focused primarily on nuclear war, Soviet concerns were not limited to nuclear arsenals. Other problems, in particular those associated with low intensity conflicts, demanded attention. The following definition of military doctrine appeared in significant Soviet literature of the 1960s:

- Military doctrine is the expression of the accepted views of a state regarding the problems of:
- * political evaluation of future war;
 - * the state attitude toward war;
 - * a determination of the nature of future war;
 - * preparation of the country for war in the economic and moral sense;
 - * organization and preparation of the armed forces;
 - * methods of waging war. (229:237-239)

For purposes of continuity, these "problems" are translated into questions, and subsequently addressed in each major period of Soviet doctrine. (Compare to Figure 4).

The 1960s were brand new when Khrushchev presented a major policy speech before the 4th Session of the Supreme Soviet of the USSR--a speech considered to be the crucial point in the development of a new Soviet military doctrine. Many of the same points highlighted in Figure 4 were emphasized in Khrushchev's speech. To begin, he stated war was no longer fatally inevitable--that a surprise attack is possible but could not by itself win a war--and that the redundancy of rockets and missiles could ensure those surviving the first strike would be able to effectively rebuff the enemy (144). If attacked, he continued, the USSR would annihilate the country or countries provoking such an attack (144). Although the USSR would suffer greatly, he made it quite clear the aggressor would suffer more. Filling in some of the details, he had to assume the war would most probably be unleashed with a surprise attack against the Soviet Union. Furthermore, such provocation would escalate to nuclear war. With this in mind, the primary mission of the Soviet Armed Forces would include a repulsive and instantaneous crushing strike delivered in retaliation (144).

What is the probability of a future war and who will be the enemy? Clearly, the Soviet Union, when considering the probability of war and the nature of its enemy, considered the imperialist aggressors their most fervent enemy. For example, a 1961 textbook designated the enemy in these

general terms: "If the imperialist aggressors succeed in unleashing World War Three, then it will be an armed clash of two opposed social systems and will assume a class nature" (92:331). At the 23rd Party Congress in 1966, General Secretary Brezhnev said the objective of Soviet foreign policy was to "firmly repel the aggressive forces of imperialism, and deliver mankind from the threat of a new world war" (222:53). Imperialists, as used here, does not necessarily refer solely to the United States.

What will be the character of the war in which the state and its armed forces will have to take part, and what goals and missions might face them in this war? The Soviet Union predicted future war "will inevitably become a world nuclear rocket war" (222:54). In the first edition of Military Strategy, published in 1962, the authors pointed out the next war would be "first of all a nuclear rocket war. . . .The main means of attaining the goals of war for solving the main strategic and operational problems will be rockets with nuclear charges" (229:242). The element of surprise, as summarized by prominent military writers of that period, was the primary focus of Soviet doctrine. Soviet military doctrine "proceeds from the fact that the imperialists are preparing a surprise nuclear rocket attack against the USSR and the other socialist countries" (93:357-358). Hence, the main and paramount task of Soviet military doctrine was "to be constantly ready to repulse a surprise

attack of the enemy and to frustrate his criminal plans" (93:357-358). Concerning the possible length of war, Soviet doctrine dictated that "[the Soviet Union] views nuclear war as short and swift-moving. At the same time, it recognizes that in definite circumstances war might take on a protracted character" (222:56). In any event, the requirement for victory was straightforward (228:123):

Correct, scientifically substantiated doctrine makes it possible to successfully conduct preparations for a potential war, and to gain victory when a war becomes fact. An erroneous and adventuristic military doctrine can propel a state into an abyss and lead to destruction.

To achieve that victory, the Soviets concerned themselves with determining force requirements, including basic organizational hierarchy. More specifically, what armed forces are necessary to accomplish the tasks that might be assigned, and what direction must the development of armed forces take? Throughout the 1950s and early 1960s, the Soviets came to the conclusion that "final victory over the aggressor can be achieved only as a result of the joint actions of all the services of the armed forces" (229:238). In 1965, due to a continued emphasis on nuclear capability, the Soviet Union determined "the main role in the war will be played by the Strategic Rocket Forces and also by [anti-air defense] troops" (237:338). The task at hand became one of negating America's strategic nuclear forces.

How are preparations to be carried out for the possibility of a future war? The Soviet Minister of Defense

was given the duty of developing general requirements. In addition to the armed forces' ability to mobilize, among them was the following:

training in the conduct of actual combat, material and technical support, and outfitting the territory of the entire nation as a theater of military operations. In addition, there is a need for strategic intelligence which must be obtained in times of both peace and war. Preparation of the national economy encompasses industry, transport, agriculture, and communications. The entire population must have moral-political preparations, must know the basics of military combat, and must understand and be trained in measures for defense from weapons of mass destruction. (222:61)

Finally, by what methods shall the Soviet Union conduct war? Quite simply, the basic method of waging war will be

massed nuclear rocket attacks inflicted for the purpose of destroying the aggressor's means of nuclear attack and for the simultaneous mass destruction and devastation of the vitally important objectives comprising the enemy's military, political and economic might, for crushing his will to resist, and for achieving victory within the shortest period of time. (229:238-239)

According to the Third Party Program of 1961, the Soviet people are not warmongers. Instead, it points out their search for peaceful coexistence. The main objective emphasized by the Program was "to ward off a thermonuclear war, to prevent it from breaking out" (Emphasis in the original) (222:33). Continuing, "It is possible to avert a world war. . . general and complete disarmament under strict international control is a radical way of guaranteeing peace" (222:33). The guiding principles outlined in the Third Party Program of 1961 remained a basic Soviet directive until 1986, when President Mikhail Gorbachev

presented a revised edition to the 27th Party Congress for approval. Nevertheless, issues of the arms control era of the 1970s warrant critical analysis.

At this point, it is particularly prudent to emphasize that Soviet military theorists and strategists do not "set forth their own ideas on military doctrine; rather, they elaborate on doctrinal decisions already made at higher levels" (222:28). The careful analysis of Soviet writings on doctrine highlights several constant themes (Figure 4):

-
1. Doctrine has two sides: political and military-technical. Politically, Soviet military doctrine is against aggressive, unjust, predatory wars. It supports liberating, just, revolutionary wars. At the same time, military doctrine considers that war is no longer a fatal necessity. Militarily, doctrine is determined by: (1) radical changes in armaments and equipment, and (2) combat training and moral-combat qualities of troops.
 2. Doctrine is for world war; if not prevented, a new world war will be unleashed by the imperialists. If unleashed, a new world war would be a decisive armed clash of two opposed social systems--capitalism and socialism. War might begin by surprise with massive use of nuclear-armed long-range rockets. It is not excluded that world war could escalate from a local conflict. A surprise nuclear attack is most likely. Therefore the primary task is to be constantly ready to reliably repulse a surprise attack of the enemy and to frustrate his criminal plans.
 3. The war may be short and swift-moving, or it may be protracted. Nuclear rocket weapons will play the decisive role, but final victory over the aggressor can be achieved only as a result of joint actions of all services of the armed forces and service arms. Future war will demand massive multimillion-man armies. Troops must be ready to fight both with use of nuclear weapons and without them.

(222:29)

FIGURE 4: Themes of the 1960s Soviet Military Doctrine

Soviet Military Doctrine of the 1970s

The 1970s was most notably the decade of arms control. In 1972, President Richard Nixon signed the Strategic Arms Limitation Treaty (SALT I) in Moscow. This treaty signified to the world that the Soviet Union's military power was at parity with the United States. In 1974, President Gerald Ford went to Vladivostok to sign another accord related to arms control. In 1978, President Jimmy Carter met General Secretary Leonid Brezhnev in Vienna, Austria, to sign the SALT II Treaty (never approved by the US Senate). A period of detente between the Warsaw Pact and NATO powers existed in one form or another throughout the 1970s, despite the continued build-up of Soviet armed forces following SALT I.

Concentration on arms control throughout the decade did little to change any emphasis of military doctrine of the 1970s from that published in the 1960s. In 1971, The Officer's Handbook restated basic concepts of military doctrine--concepts not too far removed from those published in the 1960s. For example,

Military doctrine determines the main trend in military development and establishes a common understanding of the nature of possible war and of the tasks involved in defending the state and preparing it to repel imperialist aggression. (222:73)

Some relatively minor changes did appear in the early 1970s. For example, doctrine was distinguished from military strategy. An explanation follows (222:73):

Strategy as a scientific theory elaborates the fundamental methods and forms of armed combat on a strategic scale and, at the same time, produces the guiding principles of war. . . .In wartime, military doctrine drops into the background somewhat, since, in armed combat, we are guided primarily by military-political and military-strategic considerations, conclusions and generalizations which stem from the conditions of the specific situation. Consequently, war, armed combat, is governed by strategy, not doctrine.

Doctrine, as argued in The Officer's Handbook, is not concerned with investigating past experience of armed combat; instead, it "exists primarily for the present and the immediate future" (222:73). In the 1970s, Soviet military doctrine was emphasized as "offensive in character" (222:73). Figure 5 lists five basic questions military doctrine must answer. These questions "comprise the basis of the content of military doctrine" (114:315).

-
1. What enemy will the country have to deal with in a possible war?
 2. What is the character of the war in which a state and its armed forces will have to take part, and what goals and missions might face them in this war?
 3. What armed forces will be necessary to fulfill the given missions and what direction to conduct military development?
 4. How are preparations for war to be carried out?
 5. What are to be the methods of conducting the war?

Source: (114:315)

FIGURE 5: Concerns of Military Doctrine in the 1970s

Military doctrine deals not only "with the role of the armed forces in war, but also. . . .with the role of all of the people and all significant spheres of state activity" (222:74). With that in mind, a slight variation on the

theme of military doctrine sprang into action. Grechko, in his book entitled On Guard Over the Peace and the Building of Communism, defined military doctrine and stated its purpose. Grechko's definition of military doctrine follows:

Military doctrine is elaborated by the political leadership of the state with the participation of higher military agencies on the basis of an evaluation of the international situation and the balance of forces in the world, taking into account the material, spiritual and military possibilities of [the Soviet Union] and of the probable enemies, the development of means of armed conflict and an evaluation of geographical and other factors. (222:74)

Grechko's definition of doctrine differs little from earlier definitions. Instead of elaborating on the content of Soviet military doctrine, Grechko stated the threefold purpose of military doctrine (See Figure 6).

-
1. Determine the Character of Future War.
 2. Determine the Tasks of the State in a Possible Military Clash and the Methods of their Resolution.
 3. Determine the Direction of Preparing the Country and the Armed Forces for War.

Source: (222:74)

FIGURE 6: Purposes of Soviet Military Doctrine

Bearing in mind the purposes of Soviet military doctrine, is the doctrine of the 1970s any different than that of the 1960s? A reexamination of the five basic questions doctrine must answer is warranted.

What is the probability of a future war and who will be the enemy? In the 1970s, the US, for the first time, was specifically named as the Soviet Union's primary enemy. No longer did it suffice to simply say imperialist aggression was the enemy. Of all the possibilities, "the main danger is presented by [nuclear war] which the imperialist aggressors, first of all the USA, are preparing against the socialist community, primarily against the Soviet Union" (222:76). Because the Soviet Union felt specifically threatened, much emphasis was given to strengthen and prepare the Soviet armed forces to counter an imperialist attack at all levels. In 1971, Grechko warned the members of the 24th CPSU Congress "It is quite evident that, if it were not for the military might of the Soviet state, the imperialists would have already forced World War III on mankind" (222:76). "Therefore," he continued, "Soviet military doctrine. . .is directed not at unleashing war but preparing. . .to repel aggression if war cannot be prevented" (222:76). Statements concerning the possibility of war and the probable enemy remained unchanged through the 1960s and 1970s. The main focus of Soviet doctrine during this era was that the Soviet Union was surrounded by military bases and military coalitions controlled primarily by the United States. This focus through the 1970s gave impetus to the following long-standing expression: "Soviet military doctrine proceeds from the fact that in the

international arena there is a fierce struggle of two social systems--socialism and imperialism" (184:15).

What will be the character of the war in which a state and its armed forces will have to take part, and what goals and missions might face them in this war? Despite the fact that throughout the 1970s a spirit of detente was supposed to exist between the NATO nations and the Soviet Union, the actual teachings of Soviet military doctrine showed little change. A standard assertion was that "Soviet military doctrine proceeds from the fact that a new world war, if the imperialists unleash it, might begin with a surprise nuclear attack by the imperialist powers on socialist countries or it may escalate from a local conflict" (184:16). Perhaps remembering World War II, Soviet leadership appeared to be most concerned with a surprise attack. Despite warnings from Great Britain and the US, as well as Stalin's own intelligence agencies, the German attack in June 1941 had caught the Soviet Union by surprise. "Various methods of unleashing the war are possible, including the surprise use of nuclear weapons or just conventional means of destruction" (222:82). In 1979, the Soviet people were assured that although the probability of a surprise attack remained, it could be prevented by maintaining the combat readiness of the armed forces:

The Party sees the main task as the whole sum of sociopolitical, organizational-technical and educational measures to assure such a level of military might of the Soviet state and the combat readiness of its armed forces which would exclude any possibility of taking us by surprise and would allow the carrying out of a retaliatory crushing strike on an aggressor no matter where he is located. (269:163)

The possibility of escalation continued to dominate center stage throughout the 1970s. Soviet theorists devoted considerable attention on the possibility of a conventional war escalating to general nuclear war (222:84).

What armed forces are necessary to accomplish the tasks that might be assigned, and what direction must the development of armed forces take? To begin, there was no letup in the emphasis placed on the need for nuclear missiles. In 1973, Minister of Defense Grechko stated, "the guarantor of defense for socialist countries was first of all the nuclear rocket shield of the Soviet Union" (222:85). Soviet military doctrine does not exclude, under certain conditions, the more rapid advancement "of one or another service of the armed forces. At the present time, we are paying [particular] attention to developing the Strategic Rocket Forces. . .the main means of restraining the aggressive aims of imperialism" (222:86). As illustrated by this viewpoint, Soviet military strategists, although continuing to emphasize offense as the basic strategic action, began to specify the importance of defense in war during this period. "The armed forces," they said,

must be capable of organizing its forces and conducting defensive actions on a strategic scale for the purpose of frustrating or repelling an enemy attack and holding or defending certain territory. They must be capable of winning time in order to concentrate the necessary forces to hold back the enemy in one direction and achieve superiority over the enemy in another. (222:86)

How are preparations to be carried out for the possibility of a future war? Following the 24th CPSU Congress in 1971, "Minister of Defense Grechko restated the general guidelines, which differed little from those given in 1966" (222:87). In essence, "maintaining combat readiness of the army to repel aggression [is] especially important" (222:87). To do this properly required significant reorganization of the total Soviet military structure in the 1970s (222:88). Particular attention was devoted to preparations for nuclear war. Measures to limit the effectiveness of the opponent's weapons included "dispersion of military facilities and personnel, utilization of the terrain for maximum concealment, and the construction of shelters" (222:89). Soviet military developments in the 1970s supported the premise that "Soviet military doctrine is offensive in character" (222:89). The political Soviet leadership of the 1980s deny their doctrine's offensive nature.

Finally, by what methods is the war to be conducted by the Soviet Union? Throughout the 1960s and 1970s, the focus of attention was clearly dominated by the possibility of nuclear war. It seems the Soviet Union concerned itself

with the threat of a perceived Western first-use policy. Brezhnev, in a 1977 speech at Tula (a city just south of Moscow), accused the NATO nations of "maintaining their first-use policy in order to retain the ability to threaten the Soviet Union with nuclear weapons" (222:92). Although admitting the Soviet Union was improving its defenses, Brezhnev denied allegations "that the Soviet Union is going beyond what is sufficient for defense, that it is trying to attain superiority in weapons in order to deal a 'first-strike'" (222:92). "Instead," he claimed, the Soviet Union "sought not superiority in weapons but a course that will result in reducing armaments and easing the military-political confrontation" (222:92). One would hope such a course could become a reality in the 1980s. But new developments in military doctrine, although promising, would sound all too familiar.

Soviet Military Doctrine of the 1980s

Manuilski's declaration begins to hit home during the "thawing" of the 1980s. Soviet leaders had one all-encompassing objective--reassure the world that their military forces were not a threat to the rest of the world. Unlike the 1970s, when Soviet military doctrine was characterized as "offensive," the Soviet Union of the 1980s reflects a more passive attitude--a "defensive" posture is reflected in its doctrine. On the 25th anniversary of the

Warsaw Pact, General Secretary Brezhnev issued the following declaration to those in attendance:

There is not now, never was and never will be any strategic doctrine other than a defensive one. There is not now, never was and never will be the intention of creating a potential for a first nuclear strike. . . .the Warsaw Pact nations had never and would never aim for military superiority. (222:97)

In a show of goodwill, "the Soviet Union announced a unilateral withdrawal of troops and arms, including tank units, from Central Europe [and] reiterated a call for a conference on military detente and disarmament in Europe" (222:97). On the question of Afghanistan, invaded by the Soviet Union just a few months previously, Brezhnev's declaration stated that,

Together with the full termination of all forms of outside interference against the government and people of Afghanistan, the commencement of the withdrawal of Soviet troops from Afghanistan will be started. (222:97)

It was not until a new, more dynamic leader came onto the scene some seven years later that the full impact of "new thinking," as realized through perestroika, made its mark.

What is the probability of a future war and who will be the enemy? The 1980s, according to the first book of a new Officer's Library series, was accompanied with the threat of a new Soviet enemy--China. This new enemy posed somewhat of a dilemma for the Soviet Union. If capitalism was the source of all wars, how could China be a threat? The Soviet leadership had to be careful not to confuse the Soviet people. "[China's] position is incompatible with the

Leninist idea of the necessity of close economic and military cooperation of people in the struggle for Socialism" (269:517). The leadership of the Soviet Union felt the Maoist policy and ideology showed

the feverish attempts of Peking to disrupt detente, not to permit disarmament, to sow distrust and enmity between states, their aspiration to provoke a world war and warm their hands in it, represent a great danger for all peace-loving people. (269:517)

The world was in for several more surprises due, in large part, to the end of Brezhnev's 18-year reign as leader of the CPSU. To begin, a quick succession of Party leaders emerged. Major reassignments among key command and staff personnel in the Soviet armed forces occurred. New technologies and scientific discoveries led to the development of new weapons and alterations in the military structure. And finally, serious economic and social problems wreaked havoc in the Soviet Union. During the brief tenure of Andropov and Chernenko as General Secretary, there had been "no significant shifts in Soviet military writings on doctrinal matters" (222:101). However, dramatic change has occurred since the designation of Mikhail Gorbachev as General Secretary of the Soviet Union.

In the opening paragraphs of Gorbachev's report to the 27th CPSU Congress in 1986, he claimed that "[the Soviet Union has] secured military strategic parity and [has] thereby substantially restricted imperialism's aggressive

plans and capabilities to start a nuclear war" (222:101).

"Soviet military doctrine," he continued,

is also entirely in keeping with the letter and spirit of the initiatives [the Soviet Union has] put forward. Its orientation is unequivocally defensive. In the military sphere [the Soviet Union intends] to act in such a way as to give nobody grounds for fears, even imagined ones, about their security. (222:101)

Gorbachev did not stop there. In his report to Congress he declared states should lower their military potential to the limits of "reasonable sufficiency." In his words, "Our country is for withdrawing weapons of mass destruction from circulation and limiting the military potential with the limits of reasonable sufficiency" (222:102). Other Soviet spokesmen agree. "Soviet military doctrine. . . is of a strictly defensive nature. It has essentially become a doctrine of preventing war" (222:101). Others did their part to substantiate the authenticity of Moscow's change from what had been offensive doctrine to what is now defensive doctrine. Professors at the Lenin Military-Political Academy wrote that Lenin himself declared "that socialist states wage and will wage only defensive wars. However these wars are defensive in their political goals and not in the methods of waging" (183:251). The authors went on to say "as history shows, the Soviet state has never threatened anyone, but in the event of an attack on it by the imperialists, it will wage decisive offensive war right up to the complete destruction of the enemy" (183:251). Where does the essence of reasonable sufficiency lie?

According to one Soviet strategist, the political aspect of reasonable sufficiency lies "in its emphasis on the strictly defensive function of armed forces and their readiness for defense against outside attack and not for attack and aggression" (222:104). Continuing, the "concept of reasonable sufficiency is oriented to the future and carries a charge of ideas for long-term action" (222:104). A Soviet general, V. V. Serebryannikov, explained the concept of sufficiency (222:104):

The sufficiency of military potentials is expressed both in terms of the precise quantity and quality of armaments and the troops themselves intended for defense, and also in terms of their structure and stationing. . . [The Soviet] military might and combat readiness must be sufficient to permit them not to be taken unawares. . . and, if a hostile attack occurs, to deal the aggressor a crushing rebuff. . . Sufficiency does not preclude but, on the contrary, presupposes the presence of strategic parity--that decisive factor in preventing war.

Subtle changes have prompted a slight rewording of the five basic questions (See Figure 7).

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1. What is the degree of probability of future war and with what enemy will one have to deal?
 2. What character might the war take, which the country and its armed forces might have to wage?
 3. What goals and missions might be assigned to the armed forces in anticipation of such a war? What armed forces are necessary to have, in order to fulfill the assigned goals?
 4. In what way, proceeding from this, should military structuring be accomplished? In what way should the army and the country be prepared for war?
 5. By what methods to conduct the war, if it breaks out?

Source: (222:105)

FIGURE 7: Military Doctrine Reworded for the 1980s

Answers to these questions can be found in writings by both the Party and military leadership, as well as deduced by observing internal and external actions undertaken by the Soviet Union in preparation for the possibility of war (222:105). Each question will now be addressed separately.

What is the degree of probability of a future war and who will be the probable enemy? Under Andropov, the US continued to be singled out as the primary enemy. Preparations for war in the NATO bloc, headed by the US, were said to "have grown to an unheard of scale" (222:109). No change was apparent under the leadership of Chernenko. Chernenko claimed a "drastic escalation" in the policies of American imperialism had occurred in recent years--"a policy of undisguised militarism, striving for world supremacy, resistance to progress, and violation of the rights and freedoms of the peoples" (222:109). Gorbachev, while addressing the 27th Party Congress in 1986, asserted that "the capitalist world has not abandoned the ideology and policy of hegemonism; its rulers have not yet lost the hope of taking social revenge and continue to indulge themselves with illusions of superior strength" (222:109). He commented further, "the military-industrial machine of the USA remains the locomotive of militarism" (222:109). Gorbachev also mentioned relations with China in his address to the 27th CPSU Congress. "One can say with gratification that there has been a measure of improvement in the Soviet

Union's relations with its great neighbor--socialist China" (222:110). Apparently Gorbachev's policy of "new political thinking" (perestroika) has, in some ways, convinced the world of a major change in the Soviet Union's foreign policy. Peace, after all, was the subliminal theme of the 27th CPSU Congress.

What character might the war take which the country and its armed forces might have to wage? Throughout the 1960s and 1970s, Soviet leadership anticipated a world war between NATO and the Warsaw Pact would begin with a surprise nuclear strike. Little had changed in the 1980s. In a 1982 document, the author repeated the same basic thesis. "In present-day conditions, a war between the nations of imperialism and socialism would become a decisive armed conflict between two diametrically opposed social systems--capitalism and socialism" (222:111). A 1985 book written by the commander-in-chief of the Soviet's western theater of military action (TVD) elaborates further (222:111):

Soviet military doctrine presumes that a contemporary world war, if the imperialists nevertheless unleash it, will take on an unprecedented spatial scope, enveloping all continents and oceans and inevitably will draw into its orbit the majority of countries of the world. It will assume an unprecedentedly destructive character.

Regardless of the manner in which a war might begin, the need to keep the Soviet armed forces "in a high state of combat readiness, ensuring their timely deployment to repulse a surprise enemy attack is the most important position of the military-technical content of Soviet

military doctrine" (222:112). A quick look at recent trends (1980s) of Soviet armament production will attest to the importance of the military-technical content of Soviet military doctrine (See Table 8).

TABLE 8
Soviet Production, Before and After Gorbachev

<u>Equipment Type</u>	<u>Pre-Gorbachev Yearly Average (1982-84)</u>	<u>Gorbachev Yearly Average (1986-88)</u>	<u>Gorbachev (1989)</u>
Tanks	2,800	3,400	1,700
Other Armored Vehicles	5,400	4,600	5,700
Towed Field Artillery	1,300	1,000	800
Self-Propelled			
Field Artillery	900	900	750
Multiple Rocket Launchers	600	480	300
Self-Propelled			
Anti-aircraft Artillery	200	100	250
Submarines	9	9	9
Major Surface Warships	9	9	12
Minor Surface Combatants	57	55	54
Bombers	40	47	40
Fighters/Fighter Bombers	950	700	625
Anti-submarine Warfare			
Fixed-Wing Aircraft	5	5	5
Airborne Warning and			
Control System (AWACS)	2	5	5
Military Helicopters	580	450	400
Intercontinental Ballistic			
Missiles (ICBMs)	116	116	140
Submarine-launched Ballistic			
Missiles (SLBMs)	115	100	100
Short-range Ballistic			
Missiles (SRBMs)	580	700	700
Long-range Sea-launched			
Cruise Missiles (SLCMs)	35	200	200
Short-range Sea-launched			
Cruise Missiles (SLCMs)	980	1,100	1,100
Surface to Air Missiles			
(SAMs)	15,000	16,000	14,000

Source: (64:38)

What goals and missions might be assigned to the armed forces and what armed forces are necessary to fulfill the assigned goals? Soviet strategists charge the Soviet armed forces with three missions (See Figure 8). The first and foremost mission of the Soviet armed forces is to "have the capability of waging an uncompromising war with imperialism, if imperialism unleashes a war, to the complete and final defeat of imperialism" (222:114). This mission requires "constant high combat readiness--the ability at any moment to repulse and to frustrate aggression from no matter where it comes and no matter what ways and means the enemy uses for this" (222:114). Regardless of whether the war is nuclear or conventional, "the most important component of the combat task both in the offensive and in the defensive is destruction of the enemy's means of nuclear attack" (270:414). "Victory in war is both the goal and mission of the Soviet armed forces" (222:116). Combat readiness is "the crown of military mastery of personnel in peace time and the key to victory in war" (238:292).

-
- * To Give a Decisive Repulse to any Aggressor
 - * To Reliably Protect the Socialist Gains of the Soviet People
 - * To Protect the Socialist Gains of the Peoples of Socialist Countries

Source: (222:114)

FIGURE 8: Missions of the Soviet Armed Forces

In what way should military structuring be accomplished and the army and the country prepared for war? The Soviets define military structuring as "the system of economic, sociopolitical, purely military and other measures of a state that are carried out in order to strengthen its military might" (222:118). The most important aspect of military structuring "relates to the armed forces; that is, determining the manner in which to organize, man, train, provision and equip them" (222:118). In military structuring, "great significance is being given to development of ways and means of counteracting surprise" (145:313). An overall guideline in military structuring, and one of the "most important positions of the military doctrine of socialist states is that military structuring be accomplished under the leadership of the Communist Party" (238:248) (Emphasis in the original).

If war breaks out, by what methods should it be fought? Soviet strategists "anticipate that nuclear weapons, conventional weapons, or a combination of the two might be used in a future war" (222:122). The Soviet Union, according to its leaders, will not be the first to use nuclear weapons. In 1985, General Gareyev described strategic operations as "increasing in size with different services of the armed forces participating in them. . .they would have high dynamism and maneuverability of combat actions" (222:124). He continued, "there would be an

absence of solid fronts. . .acute and rapid changes of circumstances. . .and a fierce struggle to seize and hold the initiative" (222:124).

Soviet Military Doctrine in the 1990s

There are great hopes in the West that fundamental changes are taking place in Soviet doctrine. Mikhail Gorbachev, at the 27th CPSU Congress in early 1986, declared Soviet doctrine as unequivocally defensive in character. In fact, Gorbachev went so far as to say, "in the military sphere [the Soviet Union intends] to act in such a way as to give nobody grounds for fears, even imagined ones, about their security" (222:253). Nevertheless, one must remember Soviet doctrine is much different from the concept of Western military doctrine which is merely a set of principles for the use of armed forces in combat. Soviet military doctrine transcends the Soviet armed forces. "It impacts all aspects of Soviet life, whether it be the military-patriotic education of Soviet youth, the location of new industries, or scientific exchanges with the noncommunist world" (222:254). Soviet military doctrine provides "the overall framework for preparing the [Soviet Union] against the possibility of a future war. It is concerned with the very essence of war" (222:254). While the Western world should not discount the probability of actual change in Soviet Union goals, a realistic approach is deemed necessary. The military doctrine announced by

Khrushchev in 1960 remained essentially unchanged under Brezhnev. After Mikhail Gorbachev was designated Secretary General in 1985, new slogans altering some of the earlier words appeared, but the substance remained. Gorbachev's attempt to restructure the Soviet economy and government may set in motion uncontrollable events. Regardless of the leadership, alterations of the Marxist-Leninist goal of scientific communism is improbable--the "overthrow of capitalism will remain the basic thrust of Soviet military doctrine" for the foreseeable future (222:264).

Summary

Military doctrine is defined for the Soviet Union as a nation's officially accepted system of scientifically founded views on the nature of modern wars and the use of armed forces in them, and also on the requirement arising from these views regarding the country and its armed forces being made ready for war. (83:37)

Soviet military doctrine is the political policy of the Communist Party and the government in the military field. Its directives have legal force; it governs all of the actions of the military and it unifies the views of military personnel in the solution of present-day military tasks (222:74). Soviet military personnel study doctrine and are guided by its principles. Soviet military doctrine is a unified system of views and a guide to action that is not open to controversy (222:74). In simple terms, it is the Party line on military affairs and it demands unquestioning

acceptance of Party decisions, regardless of service or post.

When Mikhail Gorbachev became Secretary General in March 1985, perestroika became the centerpiece of new political thinking in the Soviet Union. There was reason for this to occur. The Soviet Union's gross national product (GNP) was increasing at such a slow rate the standard of living would decrease and/or the material well-being (health and education) would be significantly reduced if no measures were taken to improve the GNP. Science and technology, according to a number of Soviet press releases, was also on the decline. Soviet military doctrine "directs moral-political indoctrination of the population as one means of preparing the nation for future war" (222:262). Since the laws of war state that "the course and outcome of war are dependent upon the economic, scientific-technical, moral-political, as well as the military potentials of the belligerent sides, the military superpower status of the Soviet Union could be endangered" (222:262). Soviet leadership had much reason to support perestroika. Should the Soviet economy and its science and technology continue to lag, there is little doubt the future of the Soviet Union as a military superpower would be in jeopardy. Marxism-Leninism requires the Soviet Union leadership to seek to keep the laws of war in its favor. That is precisely what perestroika hopes to accomplish. Perestroika and glasnost

are "more than a blueprints for economic and social reform.
They are elements in the economic and moral-political
content of Soviet military doctrine" (222:262).

References Cited in Chapter Five

(Numbers refer to Citations and Master Bibliography Listing)

41. Chuvikov, P. A., Soviet Colonel. Marxism-Leninism on War and Army, 2nd ed. Moscow: Voenizdat, 1956.
64. Department of Defense. Soviet Military Power 1990, 9th ed. Washington DC: Office of Secretary of Defense, September 1990.
83. Dictionary of Basic Military Terms. Moscow: Voenizdat, 1965.
92. Federov, G. A., et al. Marxism-Leninism on War and Army, 1st ed. Moscow: Voenizdat, 1961.
93. Federov, G. A., et al. Marxism-Leninism on War and Army, 3rd ed. Moscow: Voenizdat, 1962.
99. Frunze, Mikhail V. "A Unified Military Doctrine for the Red Army." From The Soviet Art of War. W. F. and H. F. Scott, editors. Boulder CO: Westview Press, 1982.
114. Grechko, A. A. Armed Forces of the Soviet State, 1st ed. Moscow: Voenizdat, 1974.
137. Ivanov, Semyon P., Soviet General. "Soviet Military Doctrine and Strategy," Military Thought. May 1969. From Joseph D. Douglas, Jr., and Amoretta M. Hoeber's "Selected Readings from Military Thought, 1963-1973, vol 5, Part 2" (English translation). Washington DC: Government Printing Office, 1982.
144. Khrushchev, Nikita S. "Report on the Central Committee CPSU to the Twentieth Party Congress," On Peaceful Coexistence. Moscow: Foreign Languages Publishing House, 1961.
145. Kin'yan, M. M., editor. Military-Technical Progress and the Armed Forces USSR. Moscow: Voenizdat, 1982.
161. Lenin, Vladimir I. "War and Revolution." From The Soviet Art of War. W. F. and H. F. Scott, editors. Boulder CO: Westview Press, 1982.
183. Milovidov, A. S., editor. Military-Theoretical Heritage of V. I. Lenin and Problems of Contemporary War. Moscow: Voenizdat, 1987.

184. Milovidov, A. S., and V. G. Kozlov. Philosophical Heritage of V. I. Lenin and Problems of Contemporary War. Moscow: Voenizdat, 1972.
222. Scott, Harriet F. and William F. Scott. Soviet Military Doctrine: Continuity, Formulation, and Dissemination. Boulder CO: Westview Press, 1988.
223. Scott, Harriet F. and William F. Scott, editors. The Soviet Art of War. Boulder CO: Westview Press, 1982.
228. Skirido, M. P. The People, the Army, the Commander. Moscow: Voenizdat, 1970.
229. Sokolovskiy, Vasilii D., Marshall of the Soviet Union 1952-1960. Editor of Military Strategy, 1st ed. Moscow: Voenizdat, 1962.
233. Stalin, Joseph V. "Order of the People's Commissar of Defense, 23 February 1942, No. 55." From The Soviet Art of War. W. F. and H. F. Scott, editors. Boulder CO: Westview Press, 1982.
237. Sushko, N. Ya. and S. A. Tyushkevich. Marxism-Leninism on War and Army, 4th ed. Moscow: Voenizdat, 1965.
238. Tabunov, N. D., and V. A. Bokarev, editors. Marxist-Leninist Philosophy and Methodological Theory and Practice. Moscow: Voenizdat, 1982.
269. Zheltov, A. S. V. I. Lenin and the Soviet Armed Forces, 3rd ed. Moscow: Voenizdat, 1980.
270. Zhilin, P. A., editor. History of Military Art. Moscow: Voenizdat, 1986.

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VI. Current Affairs

Chapter Overview

This chapter sets the stage for a dramatic evolution of democratic reforms throughout the world--reforms that emphasize the necessity for America to redefine current military doctrine. Designed to provide the backdrop for recent events sweeping the globe today, chapters IV and V furnished the reader a brief, historical synopsis of US aerospace doctrine and Soviet military doctrine. To fully understand the relevant issues concerning the placement of critical European WRM stockpiles, this backdrop requires a concurrent review of world-wide historical events which affect the decision-making policies of the US. Such an overview will, if nothing else, disclose the necessity for the USAF to make a reasonable and expedient decision regarding the future of USAF WRM as a subcomponent of the strategic mobility triad.

President Bush, in his State of the Union address (January 1991), spoke of freedom and democracy. "For two centuries," he said (31),

America has served the world as an inspiring example of freedom and democracy. For generations, America has led the struggle to preserve and extend the blessings of liberty. And today, in a rapidly changing world, American leadership is indispensable. Americans know that leadership brings burdens, and requires sacrifice. But we also know why the hopes of humanity turn to us. We are Americans; we have a unique responsibility to do the hard work of freedom. And when we do, freedom works.

President Bush also spoke of the sudden rush for democracy in the world, particularly Eastern Europe. "The end of the cold war has been a victory for all humanity. . .Germany is united. Europe has become whole and free" (31). He continued, "The triumph of democratic ideals in Eastern Europe and Latin America, and the continuing struggle for freedom elsewhere around the world all confirm the wisdom of our nation's founders" (31). President Bush closed his address with a profound message with regard to democratic revolutions sweeping the globe in the 1990s. In his words, "The winds of change are with us now. The forces of freedom are united. We move toward the next century, more confident than ever, that we have the will at home and abroad, to do what must be done--the hard work of freedom" (31).

Events Shaping the World Around Us

Recent events in eastern Europe have set the stage for drastic democratic reforms throughout the world. Most recently, spectacular movements include, among others, the emergence of the Soviet Union's very own perestroika, the student uprising in China's Tiananmen Square (June 1989), the political breakthrough of the Solidarity movement in Poland (August 1989), the Azerbaijanis' protest of Armenian control of their territory (September 1989), the fall of the Berlin Wall (November 1989), Rumania's uprising against its hard-line leader Ceausescu (December 1989), the US invasion of Panama (December 1989), the United Nations' stand against

Iraq's aggressive take-over of Kuwait (August 1990), and the reunification of Germany (Sep 90). Certainly, more change, for better or for worse, is sure to come--change, through time, is the essence of history.

Mikhail Gorbachev takes no credit for the whirlwind events of recent history. Instead, he admits (264:4A),

I perceive this action [recipient of the Nobel Peace Prize, 1990] of the most authoritative organization of the global community first of all not in personal terms, but as recognition of the significance of the immense cause of perestroika for the destiny of the entire world.

Mikhail Gorbachev is, indeed, responsible for a great contribution to mankind--he has introduced the world to both perestroika and glasnost. Captivated by his commitment to "restructuring," "openness," "democratization," and "new thinking," many in the West have accepted Gorbachev's declaration on the futility of war and the indivisibility of security as heralding a new Golden Age of East-West relations (111:138,142). Even President Ronald Reagan was moved to announce an "end to the cold war" as he handed over the mantle of leadership to his successor. In fact, such processes have had a combined, illuminating effect on many people, persuading most, at home and abroad, that a dominant American military presence in central Europe is no longer needed, or desired. Not everyone is so jubilant. President Gorbachev has been criticized at home because some of his social and economic reforms under perestroika have led to bloody ethnic rioting, food shortages, and demands by most

Soviet republics for independence. Latvian historian Jan Saltsmanis, whose homeland is among the Baltic republics fighting for independence from the Soviet Union, suggests,

The West was too impressed with Gorbachev. I reacted with dismay. Gorbachev has opened up borders, and he deserves a certain merit for this development, but you should not overestimate his significance. (264:4A)

Yet it is because of Mikhail Gorbachev that the Soviet people can openly express their dissatisfaction as they take on the enormous task before them--rebuilding their society.

Much of the debate over a Western response centers on the uncertain sincerity of the new Soviet "political thinking" on security. Particular emphasis has been focused on the meaning of Gorbachev's concepts of "reasonable sufficiency" and "defensive" military doctrine. Does this new thinking represent a real change in Soviet doctrine or, since there have been few, insignificant changes in Soviet forces, is it just a smoke screen to lull the West into complacency? Although recent Soviet actions indicate a reduced risk of conflict in the near term, the actions taken to date are equally supportive of traditional Soviet national security aims over the long term.

From the perception of free and democratic nations, it does not help that Mikhail Gorbachev's Marxist/Leninist predecessors speak of the Motherland as a "wolf in sheep's clothing" (126). A declaration by Dimitry Manuilski (one such predecessor), professor at Moscow's Lenin School of

Political Warfare, 1930, sums up the need for continued vigilance (168):

War to the hilt between communism and capitalism is inevitable. Today, of course, we are not strong enough to attack. Our time will come in fifty to sixty years. To win, we shall need the element of surprise. The western world will have to be put to sleep. So, we shall begin by launching the most spectacular peace movement on record. There shall be electrifying overtures and unheard of concessions. The capitalist countries, stupid and decadent, will rejoice to cooperate to their own destruction. They will leap at another chance to be friends. As soon as their guard is down, we shall smash them with our clinched fist.

Regardless of Soviet motives, perestroika offers the US both a challenge and an opportunity. Clausewitz, in his book entitled On War, puts this anomaly into perspective:

Anything omitted out of weakness by one side becomes a real, objective reason for the other to reduce its efforts, and the tendency towards extremes is once again reduced by this interaction. (43:80)

Perhaps the potential to enhance national security while simultaneously decreasing defense-committed resources is not as contradictory as it may seem. Nevertheless, such a statement is not intended to suggest the Soviet Union has become a kinder, gentler nation, nor is it to suggest the Soviet Union necessarily imitates US defense efforts. A closer examination is warranted.

Union of Soviet Socialist Republics (USSR)

The Soviet political system is currently undergoing its most radical shake-up since the Communists took power in 1917. Under the old system, the Communist Party of the Soviet Union (CPSU) leadership made all the basic decisions; the legislature (the Supreme Soviet) rubber-stamped them; and the government (the Council of Ministers) carried them out. Now, as part of his perestroika (restructuring) program, Mikhail Gorbachev is trying to make the USSR more democratic, thereby, in essence, reducing the power of the Communist Party. For example, on March 26, 1989, the Soviet Union held its first competitive elections in more than 70 years.



Saint Basil's Cathedral
Figure 9 (40:129)

Although the Communists were the only party formally represented in the elections, winning 90% of the seats, voters did reject several prominent representatives of the region. Voters also elected a number of radical reformers who were then members of the CPSU (such as Boris Yeltsin) and several nationalists in the non-Russian republics. In

March 1990, Mikhail Gorbachev was chosen as the USSR's first Executive President--now the focus of political power.

The CPSU has dominated Soviet politics for 70 years, but its power is now being eroded from both outside and within. On paper, it is a democratic organization with its leaders elected. The Party has been, until recently, a rigidly centralized body managed from the top, allowing virtually no political competition or debate and, in effect, running the country. The 28th CPSU Congress, which convened in June 1990, took the first steps toward turning the Communist Party into something more like a Western political party. In organizational terms, this means transforming it from an agency for carrying out its leaders' wishes into one for debating policies and winning popular support. In February 1990, the Central Committee agreed to the abolition of Article 6 of the USSR Constitution, which had guaranteed the leading role of the Communist Party--this will pave the way for the creation of other political parties, a number of which are already operating. The Communist Party is, in effect, breaking up: notably, the radicals (some of whom, like Boris Yeltsin, left the Party in July 1990), the conservatives (fans of former Politburo member Yegor Ligachev), and centrists (led by President Gorbachev). Additionally, Party membership is in a decline. Much of this turmoil is in response to the efforts of President Gorbachev--a man striving to establish a political system

based on laws passed by an elected assembly rather than on the whims of the Party leadership.

What the future holds for a democratically free world, exactly, is anyone's guess. Some firmly believe the Soviet Union's intentions are the key. With regard to the Soviet Union, considerations must be made for two arguments--1) the Soviet Union poses no further threat to "democracy," and 2) democratic nations have much to fear in the restructuring of the Soviet Union. A general consensus around the globe is apparent; many believe peace is finally breaking out. From a distance, it appears Gorbachev and his country are very sincere in their attempts to collect the dirt from under the rug of the Soviet past. Subsequently, many Americans, finding themselves in a gray area that tends to disappear ever so slightly with each passing moment, believe the Soviet Union poses no direct threat to the future security of the United States. Their misgivings underscore the need for the United States to reconsider current US military doctrine--they emphasize the necessity for America to shift traditional policies from an almost exclusive concentration on NATO countries to a position more capable of influencing politico-military outcomes in the resource-rich and strategically located Third World areas (191). Other Americans, unsure of Gorbachev's sincerity, remain concerned about Dimitry Manuilski's 1930 declaration. Perhaps, they insist, the Soviet "Bear" enjoys a period of hibernation,

awaiting the "thaw of the Cold War" for an opportunity to emerge with "clinchd fists at the ready to smash stupid and decadent capitalist countries." General Sir John Akehurst, Deputy Supreme Allied Commander-Europe, states (4:9),

Soviet political ideology and long term aims remain the same even if they are wrapped in a different parcel. Gorbachev seeks to make his own system work better, not turn it into a different one, devoid of its heritage.

General Secretary Gorbachev offers no rebuttal to such an idea. Nevertheless, he certainly has made a tremendous effort to mold the idea under new light. For example, when urged to abandon socialism for capitalism, his response is emphatically "no!" Put more succinctly,

How can [the Soviet people] agree that 1917 [referring to the October Revolution (AKA Red October) of that year] was a mistake and all the seventy years of our life, work, effort, and battles were also a complete mistake, that we were going in the 'wrong direction' tenders a different perspective. (111:42)

History suggests, to the vast majority of Russian citizens, Lenin's construction of socialism has reaped "immense and indisputable successes" (111:42), transforming a backward Soviet society to a mighty superpower. "The most important thing now for [the Soviet people] in the past history is that through comprehension of it we come to perceive the origins of perestroika" (111:43). Perestroika is "a revolutionary process for it is a jump forward in the development of socialism, in the realization of its essential characteristics" (111:51).

[Perestroika] puts everything in its place. [The Soviet Union is] fully restoring the principle of socialism:

'From each according to his ability, to each according to his work,' and we seek to affirm social justice for all, one law for all, one kind of discipline for all, and high responsibilities for each. (111:31)

What is this perestroika, and why does it today concern virtually every main aspect of Soviet public life? What are the final goals of perestroika? Furthermore, how does perestroika affect the United States and the North Atlantic Treaty Organization (NATO) nations? In particular, what affect may it have on the future placement of USAF WRM?

Perestroika. Much remains to be said about perestroika. Mikhail Gorbachev proceeds,

The essence of perestroika lies in the fact that it unites socialism with democracy and revives the Leninist concept of socialist construction both in theory and in practice. Such is the essence of perestroika, which accounts for its genuine revolutionary spirit and its all-embracing scope. (111:34-35)

Perestroika, in the Soviet Union, is a revolutionary renewal of the whole of Soviet society.

To some, Secretary Gorbachev is a hero. He has taken an unprecedented initiative to amend a long-standing disgrace--Stalin's unjust pillage of Socialism. But Gorbachev seems not to desire to destroy the legacy of a Socialist self-government. Instead, he seems to yearn for a thorough renewal of every aspect of Soviet life--"to repair the deformations of the Russian political character that go back many centuries" (189:45). This reformation conforms to the socialist choice. Soviets are "looking within socialism, rather than outside it, for the answers to all

the questions that arise" (111:36). Soviet successes and failures can easily be measured against Socialist ideals.

No matter what the opponents of communism think, communism originated and exists in the interests of man and his freedom, in order to defend his genuine rights, and justice on earth. (111:155)

History of Perestroika. A major landmark in Soviet history, with regard to perestroika, was the 20th Communist Party of the Soviet Union (CPSU) Congress, held in Moscow on 14-25 February 1956. The Congress approved the directives for the country's economic development for 1956-60, spelled out the principle of peaceful coexistence between socialist states, and condemned the personality cult of Stalin and its consequences (111:43). Contributions made by this Congress served handsomely as a catalyst for turning the Soviet society around, thereby liberating the USSR from the negative aspects of socio-political life engendered by "Stalin's policy of terror and mass murder" (89:5). Major political, economic, social, and ideological measures enacted by this Congress were designed to catapult the Soviet Union forward.

One prominent Soviet leader, Nikita Khrushchev, opposed such progress. As Soviet Premiere from 1958-1964, he discounted the contributions of the 20th Congress, considering most congressional decisions only as minor inconveniences to his leadership. Economic management, for example, was dominated by his improvisation. Moreover, he boldly stated to the Soviets and to the world that the

'Stalin terror' was over and [he] presented the Soviet Union as an advanced modern state, broadcasting his policy of 'peaceful co-existence'. In reality, his external policy was to conquer the West in a colossal gamble that transcends anything that the mighty Stalin had attempted. (89:5)

Khrushchev's willful and changing ideas and actions kept the Soviet society in a fever. "Ambitious and unfounded promises and predictions again produced a gap between words and deeds" (111:43).

The next stage provided a distinct and well-justified starting point towards stabilization. Decisions wrought at the October 1964 Plenary Meeting of the CPSU Central Committee reaped positive results from its sowing, and received the support of both the Party and the Soviet people. This Plenary Meeting relieved Nikita Khrushchev from his duties as First Secretary of the CPSU Central Committee, electing Leonid Brezhnev to the post. The decisions formulated and adopted were more . . .

. . . considered and more substantiated. The start of the economic reform of 1965 [aimed at improving the mechanism of economic activity in industry and construction with the emphasis on profit] and the March 1965 Plenary Meeting of the Central Committee [devoted to agriculture] were major initiatives aimed at positive changes in the economy. But, having produced a substantial though temporary effect, they petered out. (111:44)

Mikhail Gorbachev, too, is reminded that history teaches many lessons. Stalin's goal was to create an empire

tied together by communist ideology, fueled by communist efficiency, and dominated by Great Russian ambitions. But the ideology has failed, the efficiency has proven illusory, and the ambitions are obsolete. (142:112)

Secretary Gorbachev struggles against the consequences of five decades of misrule, if not against all of Soviet history as well. He has learned, first hand, that these lessons, with regard to Soviet communism, can be very brutal. About Soviet communism, Sigmund Freud, in his Introductory Lectures on Psychoanalysis (1916-17), said,

human self-esteem received three great blows from science. First, Copernicus proved that the earth is not the center of the universe. Then Darwin showed that man is not organically superior to animals; and finally, psycho-analysis asserted that man is not 'master in his own house.' (104:449,580)

The self-esteem of Soviet communism suffered all three blows at once but lumbered on for years in a dusk of denial. Despite the pretensions of Marx and Lenin, the system which bears their name is manifestly not the ordained design of history, not superior to all others, and not even the master of its own house (189:45). Secretary Gorbachev never once stated the task before the Soviet people is easy. Nor did he say Soviet history is dead-ended, communism is non-existent, nor perestroika is the beginning of something new. To the contrary, Secretary Gorbachev declared at the January 1987 Plenary Meeting:

...in its essence, in its Bolshevik daring and in its humane social thrust the present course is a direct sequel to the great accomplishments started by the Leninist Party in the October days of 1917. And not merely a sequel, but an extension and a development of the main ideas of the Revolution. We must impart new dynamism to the October Revolution's historical impulse and further advance all that was commenced by it in our society. (111:50)

Most recently, perestroika, which was introduced by Secretary Gorbachev, has spread to Eastern Europe and has unlocked communism's door to present an array of new and potentially destructive challenges for the free world. The 1990s demand a cautioned approach to the emergence of democratic processes in the Soviet Union, Czechoslovakia, Hungary, Poland, East Germany, and other countries. Although opportunities for more constructive relations with these and other countries may herald the end of the "Cold War," the substantial potential for continued instability in these countries could present new threats (including non-military threats) to the free world. These "new enemies" comprise an impressive list: population booms throughout the third world, global pollution, and international drug trafficking are but a few. For the entire world, the "thawing" of the cold war "is like coming out of a long tunnel: blinking in the sun, we have the first chance in four decades to choose our own road. It is a chance the world can't afford to lose" (261:44). President Mikhail Gorbachev has taken a bold step forward. It is now contingent upon the rest of the world to follow suit.

Goals of Perestroika. Quite simply, the goals of perestroika can be summed up in four neatly packaged statements (111:165):

1. The entire framework of political relations between the socialist countries must be strictly based on absolute independence. . .

2. The socialist community will be successful only if every party and state cares for both its own and common interests, if it respects its friends and allies, heeds their interests and pays attention to the experience of others. . .
3. Collaboration between the ruling communist parties is pivotal to cooperation between the socialist countries. . .
4. The extension, in the complicated international situation, of the term of the Warsaw Treaty, by virtue of a unanimous decision, was a crucial event.

Ultimately, the intent is to corroborate the internal affairs of the Soviet Union for the harmonized common good of all socialist countries (111:166). To paraphrase, perestroika was originated in 1956 with the 20th Congress of the CPSU in Moscow on 14-25 February (111:43) to strengthen socialism as a whole.

Perestroika is the utmost respect for the individual and consideration for personal dignity. . .[it] is the all-around intensification of the Soviet economy, and the overall encouragement of innovation and socialist enterprise. . .[it] is an unceasing concern for the cultural and spiritual wealth [of] every individual and the society as a whole. . .[It] means the elimination from society of the distortions of socialist ethics, the consistent implementation of the principles of socialist justice. It means the unity of words and deeds, rights and duties. (111:34-35)

As noted above, President Gorbachev expressed perestroika as a word with many meanings. He went on to say that of all the possible synonyms from which to choose, the one which most accurately expresses its true essence is "revolution."

Perestroika is a revolution. A decisive acceleration of the socio-economic and cultural development of Soviet society which involves radical changes on the way to a qualitatively new state is undoubtedly a revolutionary task....Never in history, wrote Lenin, has there been a revolution in which it was possible to lay down one's arms and rest on one's laurels after the victory. (111:50)

Perestroika, as a revolution, is no different. Although early battles may be won, the people of the Soviet Union realize that the revolution is far from over. The Soviets

are convinced that as a result of perestroika and democratization the country will become richer and stronger. Life will get better. There are, and will be, difficulties, sometimes considerable, on the road of perestroika, and we are not concealing that. But we will cope with them. Of that we are sure. (111:59)

With regard to the awesome force of socialism as a foundation for perestroika, history teaches the Soviet people several lessons. Among them, three stand out far above the rest (111:44):

First, socialism as a social system has proved that it has immense potentialities for resolving the most complex problems of social progress. [The Soviet Union is] convinced of its capacity for self-perfection, for still greater revelation of its possibilities, and for dealing with the present major problems of social progress which arise as we approach the [21st] century.

At the same time, we realize that improving socialism is not a spontaneous process, but a job requiring tremendous attention, a truthful and unbiased analysis of problems, and a resolute rejection of anything outdated. We have come to see that half-hearted measures will not work here. We must act on a wide front, consistently and energetically, without failing to take the boldest steps.

One more conclusion--the most important one [Secretary Gorbachev] would say--is that we should rely on the initiative and creativity of the masses; on the active participation of the widest sections of the population in the implementation of the reforms planned; that is, on democratization and again democratization.

According to President Gorbachev, "the difficult job of laying the ground for reshaping international relations has been done. And [the Soviet Union] believes that the world will be changing for the better. It is already changing" (111:160).

China's Tiananmen Square

The collapse of Imperial China in 1911 ended a period of traditional rule that had lasted for more than 2,500 years. During this time the system of government and the class structure remained unquestioned. The imperial dynasty, so many believed, was ruled by the mandate of Heaven. Rebellion might have succeeded in changing the dynasty but, fundamentally, it altered nothing. The tempo of change was increasing under the impact of the modern world, and stability was soon to be shattered by real social and political revolution.

In 1900, about ten years before the fall of the Manchu dynasty, the movement of violent xenophobia, known as the "Boxer Rebellion," had swept north and northwest China. Originally anti-dynastic, the "Boxers" (their real name was the Society of the Harmonious Fist (96:25)) turned against the privileged foreign ministers in their midst. The Boxers lay siege to Peking, where they committed many outrages on all suspected of foreign sympathies or even foreign ways of life and dress. Two foreign envoys were assassinated in the streets of the capital city. Such peasant uprisings, usually inspired by mystical and magical beliefs, have been frequent, albeit short-lived, in Chinese history. However, this strange siege, in which the Chinese refrained from using heavy artillery which would have destroyed the delegations in a day or two, dragged on for several weeks.

International relief, in the form of a formidable German army, marched into Peking. Chinese leadership, unhappy with the havoc wreaked by a foreign army, soon found itself at war with all the major European powers, and America and Japan as well. Peking was taken on 14 August 1900. New and severe limitations were imposed on China's sovereignty through negotiations. As a result, all of Manchuria was eventually occupied by Russia. The failure of the Boxer Rebellion destroyed any remaining chance of averting revolution. It was only a question of time and opportunity. Both time and opportunity presented itself in 1911.

It was not until 1920 that Russia sent a delegation to China to organize a Chinese Communist Party. At a secret meeting in the French Concession at Shanghai, the party was formally founded in July 1921 (96:47). By 1924, the party already had a record of organizing and promoting a multitude of strikes in Shanghai and other major cities. On 30 May 1925, students demonstrating in the Nanking Road, the principal shopping artery of the International Settlement in Shanghai, on behalf of strikers who worked for a Japanese textile mill, refused to disperse when one of their number was arrested by the settlement police. The students assailed the police station where police, after unsuccessfully ordering a dispersal, opened fire killing eleven students. Allegedly, the killings at Nanking were carried out by units under communist officers (96:55).

It would seem very little is different in today's world. Near Tiananmen Square, a lone man (student) armed only with courage faced down a column of tanks. As students occupied Tiananmen Square, their democracy movement waxed and waned. Taking full advantage of the "open-door policy" of China's senior leader Deng Xiaoping, outside influences such as the Beatles, Martin Luther King, Jr., and Albert Einstein have offered "new possibilities for [this] generation to see that communism isn't the only way" (197:36). With blood and tears, China demonstrated in the spring of 1989 that even the most inspiring democracy movements sometimes fails. The students who led China's uprising have since been silenced and dispersed--some are in jail, some are in exile, and others are dead. Many Chinese citizens are convinced the student movement "built a foundation upon which democracy can eventually rise" (197:36). The Chinese struggle "is not only for the Chinese people," one former student leader proclaims while adding, "if someone somewhere wants to get freedom, it's a struggle for the whole human people" (197:36).

One year after the bloody 1989 crackdown that silenced the genesis of China's democracy movement, a divided Communist Party leadership attempts to stifle dissent. At the same time, it tries to put the best face on an unpopular regime. "What we are seeing," says one senior Asian diplomat in Beijing, "is the classic politics of the end of

an era" (28:58). He continues, "Since the Emperor never retires, we must wait until he dies" (28:58). There is little China can do but wait and wonder what will follow. A matter of constant debate centers on the aftermath of the Emperor's death. Most Chinese agree the Emperor's death will be traumatic. Few believe, however, change will come from protests (similar to Tiananmen Square) in the streets, although a better-educated citizenship will certainly demand more freedom of expression (28:59). China will change slowly, as evidenced by the tragedy experienced by those students camped out in Tiananmen Square in June 1989 discovered.

Poland's Solidarity Movement

The Solidarity trade union that drove the Communists from power in Poland is splintering. Prime Minister Tadeusz Mazowiecki, backed by most of Solidarity's intellectuals and government heavyweights, believes Civic Committees--the union's grass-roots political arm--should forge a centralized party. They argue only a strong, unified entity can successfully accomplish Poland's transition to democracy. On the other hand, others suggest that political pluralism can achieve what democratic reforms (Solidarity) cannot (267). They contend that a monopoly of power by Solidarity will lead to Mexican-style one-party control at best and outright despotism at worst. Poles are quick to point out they face a dangerous situation. Parliament has

"become a set of individuals, there is no agreement on how to proceed, the majority of the population is apathetic to politics, social tensions are rising, and there are groups that want stabilization. The lack of consensus is now complete" (150:52).

The new social structures which have replaced discredited Communist institutions are still seen by a cynical population as brute instruments of power. The press, "which lied for so many years, is now free" (206:38). But it is still difficult for people to believe what it says: "viewers reflexively say that if Polish television reports it, it can't be true" (206:38). Poland is not yet the Weimar Republic but, given "the chaos Communism has left in its wake, the temptation for false prophets is great: strong personalities and blithe promises have a powerful appeal" (206:39).

Discontent is in the Polish air. The birth pangs of democracy seem unrepressible. After months of wrenching change, economic indicators, for example, point both ways in Poland. Shortages and food lines, those twin hallmarks of the communist economy, have vanished. The currency is stable, services are expanding, and government spending is tightly reigned in. The other side of the coin is less reassuring. Poland has "one million people unemployed, an unmanageable \$39.4 billion hard currency debt, severe recession, plummeting wages and national income, slumping

productivity, and a conspicuous lack of foreign investors" (149:56). Poland is coming under considerable strain as top leaders jockey for power and popular support amid rising political and economic uncertainty. Despite promises of nearly \$10 billion in Western aid and a \$360 million loan from the World Bank, the country's economy is crumbling. Although a loaf of bread costs only 40 cents, a typical Polish family earns but a meager \$60 per month (24). It would seem, as evidenced by recent events, that the Solidarity-led government's rapid move toward a market economy may be hurting those it was designed to help. Of course, no one ever said that democracy was easy, and Poland is learning that lesson. Said historian Bronislaw Geremek, who until recently served as Solidarity's parliamentary leader, "We need many, many lessons in democracy" (158:40).

Fall of the Berlin Wall and the Reunification of Germany

In 1989, East Berliners danced on top of the wall that imprisoned half a nation for a generation. The ice that locked the world into 40 years of cold war was breaking up at last. Soviet President Mikhail Gorbachev put it like this, "We are leaving one epoch in international relations and entering another" (197:24). German Chancellor Helmut Kohl added, "The future has begun" (197:24).

The upheaval in East Germany was led by people who describe themselves as members of the "silent majority" (197:20). This silent majority finally spoke out, and

within a matter of months, the Berlin Wall came tumbling down. Suddenly, communist rule in East Germany had collapsed. On East Germany's 40th anniversary, October 1989, anti-government demonstrators are chased through the streets, many beaten or injured. One month later, on November 9th, East Germany, to the surprise of the world, opens its borders. Just three days later, while thousands of West Berliners are stamping their feet in the cold and watching a construction crew on the other side of the wall, a crane strains with each attempt to dislodge the first panel of the wall. Eventually, the panel gives way. Flood lights illuminate graffiti on the slab's broken surface: the word Freiheit. "Freedom."

The new Federal Republic of Germany was created by the merger of West and East Germany on 3 October 1990. The "colossal task of absorbing an eastern half wrecked and demoralized by 40 years of Communism has come at an opportune moment" (160:43). By merging their economies, east and west have created one Deutsche mark, one nation and, perhaps, a new balance of power in Europe (Table 9). The Soviet Union can no longer lay claim to the loyalties of its East European neighbors. The US, on the other hand, can no longer assume its West European allies will look to Washington for leadership. And the North Atlantic Treaty Organization (NATO), for forty years the crucible of

security arrangements for the West, can no longer count on being the vessel in which Europe's future will be forged.

TABLE 9

One Country, Two Armies

	West <u>Germany</u>	East <u>Germany</u>
Active Military	450,000	90,000
Reserves	852,000	323,500
Tanks	5,005	3,140
Combat Aircraft	507	335
Artillery Pieces	1,272	1,260

Source: (151)

Reunification is a chancy venture. Socially, the two Germanys will endure a clash of cultures after years of separation. Economically and politically, a unified Germany may take advantage of the thawing of the cold war to exert its collective influence in an area where military might may no longer carry a decisive favor. Germany can lead by setting the agenda for Europe. German reunification creates a new and more natural balance of power in postwar Europe. But a new balance does not guarantee stability. The new Germany must rebuild the ruined East, sorting out and realigning two profoundly different societies. Germany must also come to terms with its identity as Europe's superpower. Unification has transformed the balance of power in Europe. Soviet troops must leave Germany by the end of 1994. Soviet Foreign Minister Eduard Shevardnadze referred to Germany as "an ally" (174). According to an aide to Chancellor Kohl,

"The Soviet's expectations [of Germany] are frightening. They talk about us as their 'partner' in the West" (174).

The goal of future German policy is a "European Germany, not a German Europe" (160:45). The German government remains strongly committed to membership in NATO. Says one prominent German leader, "The alliance between the North American and West European countries continues to be an indispensable guarantee for a stable change" (167:28). There is an interim consensus that NATO still has a role to play. Says a senior US State Department official, "The argument over NATO is not over its existence, but over its adaptability" (167:28). For example, Senator Sam Nunn, chairman of the Senate Armed Service Committee, is urging the US to scale back its forces in Europe to between 75,000 and 100,000 within five years (167:28). As US leadership confronts German reunification, the challenge before them is to ensure NATO does not revert once again to something that looks good only on paper.

Iraq Against the World

Shortly after Iraq's aggression toward Kuwait, President George Bush declared, "This is not, as Saddam Hussein would have it, the United States against Iraq. This is Iraq against the World" (163:42). President Bush summed up America's involvement in the Persian Gulf War quite nicely in his State of the Union Address (January 29, 1991). "Certain that we stand at a defining hour," he continued,

Halfway around the world, we are engaged in a great struggle in the skies and on the seas and sands. We know why we're there. We are Americans--part of something larger than ourselves. For two centuries we've done the hard work of freedom. And tonight we lead the world in facing down a threat to decency and humanity. What is at stake is more than one small country, it is a big idea--a new world order, where diverse nations are drawn together in common cause to achieve aspirations of mankind: peace and security, freedom, and the rule of law. Such is a world worthy of our struggle, and worthy of our children's future. The community of nations has resolutely gathered to condemn and repel lawless aggression. . . The world has answered [Saddam Hussein's unprovoked invasion of Kuwait] with 12 United Nations resolutions, starting with a demand for Iraq's immediate and unconditional withdrawal, and backed up by forces from 28 countries of six continents. With few exceptions, the world now stands as one. (31)

Before closing his speech, President Bush continued,

. . . the international community is united. The leadership of the United Nations, once only a hoped-for ideal, is now confirming its founders' vision. . . We will succeed in the gulf. And when we do, the world community will have sent an enduring warning to any dictator or despot, present or future, who contemplates outlaw aggression. . . All of us yearn for a world where we will never have to fight again. (31)

Through the efforts of the coalition forces and its leadership, President Bush's initial strategy to turn up the pressure on Iraq through a series of United Nations resolutions bore significant fruit. In the gulf crisis, the UN has functioned at long last as its creators hoped it would 45 years ago. The UN has focused world condemnation on an aggressor, authorized a global embargo, and voted to permit the use of force to back up its resolve. The UN Security Council voted 13 to zero (Cuba and Yemen abstaining) for a strongly worded resolution authorizing nations with naval forces in the areas to use "such measures

. . .as may be necessary. . .to halt all inward and outward maritime" commerce (46:25). All told, 12 UN Security Council resolutions were levied against the nation of Iraq (See Figure 10).

Unsurprisingly, a peaceful solution to Iraq's aggression was not possible. Nevertheless, the crisis presented an opportunity to build a "new world order" that would meet future aggression with international cooperation.

A New World Order

Before perestroika and glasnost had emerged in the Soviet Union, deep division existed between East and West. Arms control negotiations, for example, were at a standstill. It has been seven short years since 35 nations gathered in Stockholm, Sweden, for the Conference on Disarmament in Europe. Since that time, the world has witnessed broad arms reduction negotiations, a historic Intermediate-range Nuclear Forces Treaty, East-West summitry, and momentous changes taking place in Eastern Europe and the Soviet Union. As the last decade of a turbulent century begins, the world is full of hope and promise. Citizens of many nations wish to live in peace, security, and freedom. To do that, figuratively speaking, walls must be broken down and bridges must be built. In effect, a new world order must be shaped out of the turbulent rubble--a world order responsive to change.

RESOLUTION 660: Condemned Iraqi invasion of Kuwait and demanded the immediate and unconditional withdrawal of Iraq's troops.

RESOLUTION 661: Ordered a trade and financial embargo of Iraq and occupied Kuwait.

RESOLUTION 662: Declared Iraq's annexation of Kuwait null and void in international law.

RESOLUTION 664: Demanded that Iraq free all detained foreigners.

RESOLUTION 665: Gave the United States and other naval powers the right to enforce the economic embargo against Iraq and Kuwait by halting shipping to those countries.

RESOLUTION 666: Allowed humanitarian food aid into Iraq or Kuwait only to relieve human suffering; the Security Council to decide when those conditions exist.

RESOLUTION 667: Condemned Iraq's aggressive acts against diplomatic missions in Kuwait, including the abduction of foreigners in the buildings.

RESOLUTION 669: Stressed that only the Sanctions Committee has the power to permit food, medicine or other humanitarian aid to be sent into Iraq or occupied Kuwait.

RESOLUTION 670: Expanded the economic embargo to include all air and sea traffic in or out of Iraq and Kuwait, except for cargoes of humanitarian aid specifically authorized by its Sanctions Committee. It also called on U.N. member nations to detain any Iraqi ships that might be used to break the naval embargo.

RESOLUTION 674: Holds Iraq liable for war damages and economic losses, asked nations to collect evidence of grave human rights abuses by the occupying forces, demanded that the Western embassies in Kuwait City be restocked with food and water, and demanded that all hostages be released.

RESOLUTION 677: Condemned Iraq's alleged attempts to drive out Kuwaitis and repopulate their country, and asked U.N. Secretary-General Javier Perez de Cuellar to take possession of Kuwait's census and citizenship records for safekeeping.

RESOLUTION 678: Gave Baghdad until January 15, 1991, to comply with all previous resolutions. After that date, nations allied with Kuwait were authorized "to use all necessary means" to force Iraq to withdraw and honor the resolutions, a phrase that all council members agreed would permit a military strike.

Source: (A Compilation)

FIGURE 10. United Nations Security Council Resolutions
Levied Against Iraq

Peace is not easily maintained. Threats to collective security abound. World War I was the "war to make the world safe for democracy" (115:146), but it did not. World War II was the "war to end all wars" (217), but it did not. America, post-World War II, adapted a new military doctrine--a doctrine responsive to the threats poised against US national interests. Isolationism was inexcusable. The US accepted global responsibilities and built the necessary forces required to carry out such responsibilities. Three clear principles serve as a citadel in meeting threats to global security (207:18). First, structure a defense posture to deter aggression. Deterrence, the cornerstone of US military strategy, is geared toward preventing enemy attack. Second, respond to challenges with force if necessary. Every effort must be made to defend US and Allied citizens, global security interests, and democratic values. Third, the US must honor its commitments to collective security. The US must maintain forces willing, ready, and able to defend the global security. Soon after Iraq invaded Kuwait, a top Egyptian military officer raged at the US for not sending its troops against Saddam Hussein. "You're the only superpower left in the world," he said. Continuing, he pointed out, "We see it. The Europeans see it. The Soviets see it. Why don't you?" (214).

The notion of a "new world order" echoes a persistent theme in US foreign policy. Such a policy goes back to Woodrow Wilson's dream of "collective security" and is followed by Franklin Roosevelt's talk of "Four Policemen" after Hitler's defeat. The North Atlantic Treaty Organization (NATO) was the first positive step toward collective, global security. The US endorsed membership in NATO because "[America] understood that nations come together for one of two purposes, either common values or common threats" (207:18). There are six distinct tenets that frame the American role in NATO (207:18). First, US views and strategies are not imposed on the alliance. Open exchange, in an attempt to mold the defensive character of a common cause, is promoted. Second, the US supports the notion of collective defense. Collective defense poses a formidable obstacle to any would-be offender. All nations agree to defend collectively against a threat so great so as to overwhelm the defenses of individual states. Third, the American commitment to NATO is based on forward defense. Territorial integrity must be maintained at all costs. However, the alliance has no intention of invading or seizing territory--a defensive posture is always maintained. Fourth, the US remains committed to the strategy of flexible response. If deterrence proves futile, other options remain open--decisively squelching the opposition and restoring the status quo continues to be a primary objective. Fifth,

American troops are not occupying forces. When US troops are no longer welcomed or deemed necessary by the collective alliance of western Europe, they will be redeployed elsewhere. Sixth, US forces and interests do not dictate the military management of the alliance. Teamwork is the answer. Military decision-making must remain fully integrated within the alliance. NATO has served as a candle lighting the way toward a peaceful community of democratic nations--nations that share universal values.

The world has seen extraordinary events in the past few months. The outlook for a rosy future is promising. Many opportunities and challenges await confrontation. Nowhere are the prospects for an exciting future more evident than in Eastern Europe and the Soviet Union. A non-Communist government has been elected in Poland. A new republic has been declared in Hungary. East Germany exists only in the minds of those once burdened by its oppression. Cries for freedom ring loud and clear in the Baltics. Change is in full blossom. History must now be reshaped. Permanent, long-lasting peace must be reaped from the sowing of the twentieth century. The days of perestroika and glasnost, just a fresh, new spring, have brought color and majesty to an otherwise dark and dreary world. Americans, as well as all democratic peoples, must not become drunken with euphoria. Instead, all diligence must be given to the preservation of such a great thing as peace. A watchful eye

must be cast over the horizon. Strong, ready forces must be maintained in the event a storm threatens global security.

Summary

For centuries people have been misled in their thinking that social change is spontaneous. Most people, reluctant to believe nations are changed slowly and gradually, are optimistic that men of good will, moved by reason, can quickly change the shape of nations. Faith in such cataclysms is given the name "revolution." The current disorders in Eastern Europe and China, among others, are typical examples. People find solace in thinking that the institutions of centuries can be transformed in short order by student gatherings in Tiananmen Square, or slogans of perestroika and glasnost. Signs of civil war are not necessarily signals of revolution.

The Soviet Union has been shrouded with a great deal of civil disorder in recent years--bloodshed in Armenia, and secession threats in Baltic States. Is Eastern Europe and the Soviet Union on the brink of a revolution from communism to democracy? Only time shall tell. As the events in Eastern Europe, the Soviet Union, and China unfold, people should watch and wait, with patience, for the slow signs of changed ways of thinking and governing for which the history of those centuries must undergo. Only then can the hope of a democratically free world be justified.

Mikhail Gorbachev put it like this, "It's my conviction that the human race has entered a stage where we are all dependent on each other. No country or nation should be regarded in total separation from another, let alone pitted against another. That's what our communist vocabulary calls internationalism and it means promoting universal human values" (111:188-189). He continues, "For better or worse, . . . history is made without rehearsals. It cannot be replayed. That makes it all the more important to perceive its course and its lessons" (111:214).

References Cited in Chapter Six

(Numbers refer to Citations and Master Bibliography Listing)

4. Akehurst, General Sir John. "NATO and Europe: Practical Issues and Interests," Journal of the Royal United Services Institute for Defense Studies: 9 (Spring 1989).
24. Brumberg, Abraham. "What it takes to get from here to there," US News and World Report, 108: 41 (March 26, 1990).
28. Burton, Sandra. "One Year Later," TIME, 135: 58-59 (June 4, 1990).
31. Bush, George, President of the United States. State of the Union Address. January 29, 1991.
40. Christopher, Billy, editor. Fodor's Soviet Union. New York: Fodor's Travel Publications, Inc., 1991.
43. Clausewitz, Karl von. On War. Washington DC: Infantry Journal Press, 1950.
46. Cloud, Stanley W. "Gathering Storm," TIME, 136: 24-28 (September 3, 1990).
89. Eddowes, Michael H. B. Khrushchev Killed Kennedy. Dallas: Eddowes Dallas Foundation, 1985.
96. Fitzgerald, C. P. Communism Takes China. New York: American Heritage Press, 1971.
104. Gay, Peter. FREUD: A Life for Our Time. New York: W. W. Norton and Company, 1988.
111. Gorbachev, Mikhail. Perestroika, New Thinking For Our Country and the World. New York: Harper and Row Publishers, Inc., 1987.
115. Gregory, Ross. The Origins of American Intervention in the First World War. New York: W.W. Norton & Company, Inc., 1971.
126. Holy Bible, The. King James version. Book of St. Mathew, chapter 7, verse 15.
142. Kaiser, Roger G. "The USSR in Decline," Foreign Affairs, 67: 93-113 (Winter 1988/89).

149. Knight, Robin. "Cautious Capitalism," US News and World Report, 109: 54-56 (November 5, 1990).
150. Knight, Robin. "Poland's Feud in the Family," US News and World Report, 109: 52-56 (September 10, 1990).
151. Knight, Robin, et al. "Taps for an Unloved East German Army," US News and World Report, 109: 48 (October 1, 1990).
152. Rohan, John. "The Killing Zone," TIME, 135: 30-33 (January 29, 1990).
158. Lane, Charles. "The Perils of Poland," Newsweek, 116: 40-42 (December 10, 1990).
160. Lawday, David. "Sunset for an Old Order," US News and World Report, 109: 42-46 (October 1, 1990).
163. Lief, Louise. "Flying in Formation," US News and World Report, 109: 42-44 (September 24, 1990).
164. Link, Arthur Stanley. Woodrow Wilson and the Progressive Era, 1910-1917. New York: Harper and Brothers Publishing, 1954.
167. Mader, William, et al. "This New House," TIME, 135: 26-28 (May 14, 1990).
168. Manuilski, Dimitry. Declaration while a professor at the Lenin School of Political Warfare in Moscow, 1930.
174. Meyer, Michael. "Day One for a New Germany," Newsweek, 116: 45 (October 8, 1990).
189. Morrow, Lance. "The Unlikely Patron of Change," TIME Magazine, 135: 42-45 (January 1, 1990).
191. Motley, James B., Colonel, USAF. "A Perspective on Low-Intensity Conflict," Military Review, 65: 2-11 (January 1985).
197. "People of the Year," Newsweek, 114: 18-38+ (25 December 1989). A Special Report.
206. Pope, Victoria. "The Authoritarian Temptation," US News and World Report, 109: 38-39 (December 10, 1990).
207. Powell, Colin L., General, USA. Chairman, Joint Chiefs of Staff. "US Military Doctrine: The Way we Were and Are," Defense 90: 16-20 (March/April 1990).

214. Robbins, Carla Anne. "Is There a New World Order?" US News and World Report, 110: 50 (March 11, 1991).
217. Roosevelt, Franklin D. Address written for Jefferson Day Dinners Radio Broadcast on April 13, 1945. President Roosevelt died in Warm Springs Georgia on 12 April 1945.
261. Whitmore, Jane, et al. "Into a Brave New World," Newsweek, 114: 40-44 (December 1989).
264. "World Leaders Praise Gorbachev's Nobel," Daily Dayton News, 114: 1A-4A+ Dayton OH (16 October 1990).
267. Yalowitz, Gerson. "It's Walesa vs. the Prime Minister," US News and World Report, 109: 52 (July 16, 1990).

VII. Strategic Mobility Triad

Chapter Overview

The ability of the US to deter aggression, limit conflict, or wage war successfully depends intensively on America's ability to rapidly deploy, employ, and sustain a military force.



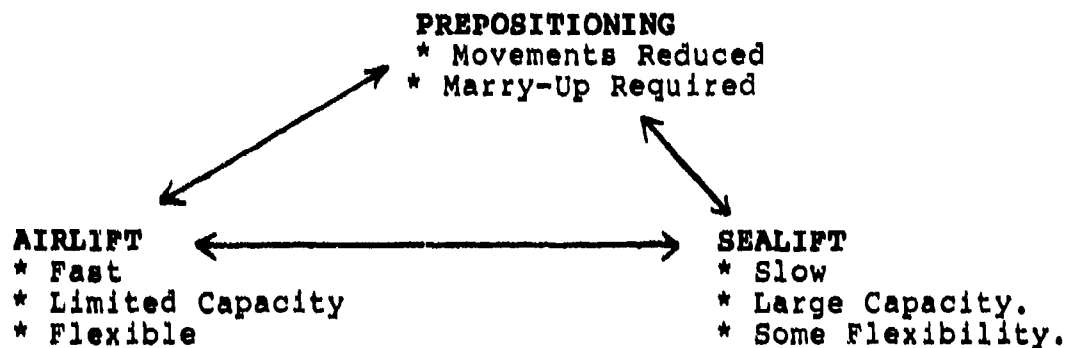
FIGURE 11: DOD Seal

Humanity (140:14) . . .

is in a period of instability and turmoil throughout the world. . . .The burden to protect freedom is on the United States, because this country is capable of projecting military forces where needed. What we need to do is increase our ability to more rapidly deploy and effectively sustain such a force in times of crisis.

With its instruments of national power, to include its armed forces, the US protects its vital interests throughout the world. Because the costs associated with maintaining sufficient armed forces in many dispersed foreign locations is prohibitive, and because politics in many locations will not allow US forces, the concept of strategic mobility was developed. Strategic mobility is defined by the Joint Chiefs of Staff as "the capability to deploy and sustain military forces worldwide in support of national strategy" (60:350;70:662). Thus, strategic mobility is crucial for the continuous protection of national interests throughout the free world as events in the Middle East in 1990-91 have shown. Desert Shield/Desert Storm attests to America's demonstrated capability to do just that.

Because the US is separated from its external defense commitments by the Atlantic and Pacific Oceans, strategic mobility is essential to America's military effectiveness. More specifically, US forces prevented from executing operations when and where needed are unable to influence the outcome of war. Consequently, prepositioned assets in Europe, for example, serve to partially meet the demands placed by NATO-related deployment requirements (15:39). However, the prepositioning concept cannot stand alone. Prepositioning forms but one leg of the strategic mobility triad (165:2). The proper balance of all three legs of the strategic mobility triad--airlift, sealift and prepositioning (See Figure 12)--results in the potential strength for deterrence (162:10).



Source: (165:2)

FIGURE 12. Balanced Capability for Force Projection

This chapter discusses and analyzes current DOD strategic mobility triad relationships and capabilities. Chapter I alluded to the importance of time and place utility with regard to prepositioning critical USAF assets. Insufficient lift capability serves as a prime motivator for present-day prepositioning policies. For example, the Merchant Marine, which provides strategic sealift for US forces, has undergone serious sealift asset reduction since the Korean War (162:11). During the Korean War, the US had "more than 2,400 dry cargo vessels at its disposal; during the Vietnam War, there were some 1,200 such ships available for military use. [In 1986] there were some 430" (162:11). The Merchant Marine fleet "is projected to decline to about 350 by the year 2000" (55:9). Equally vulnerable to such decay are US airlift assets. The Military Airlift Command (MAC)--responsible for "the airlift of people and supplies" (176:76)--accomplishes the majority of its mission through the use of approximately 1000 aircraft (176:76). Table 10 displays MAC's primary airlifters (the C-130, the C-141, and the C-5) by quantity and age. A close examination reveals that 40% of the C-5 Galaxys are more than 15 years old. Of the 336 C-130 Hercules, all but 23 are more than 12 years old with roughly one-half (161 aircraft) more than 24 years old. Finally, every C-141 Starlifter in the inventory is more than 21 years old. Incidentally, prepositioning saves one C-141 aircraft sortie for every 25 tons of materiel and

equipment forward deployed, assuming assets are prepositioned where they are needed (15:2). MAC's current airlift force, while impressive, is simply too small and does not provide enough airlift to meet America's increasing need for rapid mobility. During Desert Shield, the first and second stages of the Civil Reserve Air Fleet (CRAF) were activated for the first time. It worked well; however, no enemy posed any opposition.

TABLE 10

MAC's AIRCRAFT--HOW MANY, HOW OLD?

Type	0-3 YRS	3-6 YRS	6-9 YRS	9-12 YRS	12-15 YRS	15-18 YRS	18-21 YRS	21-24 YRS	24+ YRS
C-5	43	7	-	-	-	25	8	-	-
C-130	13	9	-	1	50	24	54	24	161
C-141	-	-	-	-	-	-	-	213	41

Source: (246:48)

This chapter asserts the importance of the strategic mobility triad and offers current perceptions of each of the major DOD strategic mobility programs. Before addressing any individual component of the triad in depth, a basic understanding of the underlying US strategic mobility strategy, as well as the unique attributes and limitations of the individual components that must execute this strategy is warranted.

Background

Through the 1970s, more than 150 mobility assessments were conducted and, regardless of the scenario or assumptions used, the conclusion was the same: significant shortfalls in strategic mobility deployment and resupply capability existed (54). "Nifty Nugget," the first DOD mobilization exercise since WWII, is a case in point. Nifty Nugget (1978) received a tremendous amount of publicity because it identified many serious shortcomings within America's strategic mobility system (196:27). Nifty Nugget illuminated critical shortfalls in the event the US suddenly had to go to war because of its long-standing commitment to defend its NATO allies in Europe. As a result of this 1978 exercise, the DOD recognized the need for a single planning and coordinating agency to manage the complex strategic mobility system. In 1979, the Joint Deployment Agency (JDA) was established to plan, coordinate, and monitor the movement of mobilized US armed forces, both active and reserve, within the US and to overseas areas. In essence, the JDA served as the single point of contact for US deployment actions. The 1981 Defense Authorization Act required the DOD to conduct a mobility study to determine the lift capability needed for response to contingencies. Of the 150 mobility assessments conducted throughout the 1970s and early 1980s, only one study did more than address the mobility problem in a piecemeal fashion--the

Congressionally Mandated Mobility Study (CMMS), 1981, was the first effort to seriously address the mobility problem in its entirety. It examined all modes of transport under varying threats and four wartime scenarios (See Figure 13). In every case, according to General DeHaven, the bottom line was still the same--the US cannot get there from here in time (54). Simply put, the report concluded DOD was short of cargo capability and recommended a program be developed to reach 66 million ton miles per day.

-
1. A Soviet-backed indigenous force attacked Saudi Arabian oil fields.
 2. The Soviets invaded Iran.
 3. A NATO/Warsaw Pact conflict.
 4. A two-front engagement which combined the scenarios in Southwest Asia and NATO.

Source: (54)

FIGURE 13. Wartime Scenarios posed by the CMMS

As a result of the CMMS, the Secretary of Defense presented the following recommendations (Base Line (1986)) to Congress (82):

1. Airlift enhancement programs for the C-5 wing modification, additional C-141/C-5 spares and crews, and the Civil Reserve Air Fleet (CRAF) enhancement program.
2. The SeaLand (SL-7) fast, dedicated sealift program.
3. Six divisions of POMCUS (Prepositioning of Materiel Configured to Unit Sets) in NATO.
4. Additional USAF and United States Marine Corps (USMC) prepositioning in NATO.
5. Maritime Prepositioning Ship (MPS) program as a follow-on to the current near-term program for two brigade-sized Marine Air Ground Task Forces.

Moreover, the Secretary of Defense recommended more airlift, sealift, and prepositioning, both ashore and afloat. President Ronald Reagan, as quoted by Senator Jeremiah Denton (Chairman of the Commission on Merchant Marine and Defense), offered his insight into the strategic mobility triad relationship:

Prepositioning ashore or at sea can sharply reduce our response time. Airlift, the quickest and most flexible of our mobility assets, would deliver initial reinforcements in most contingencies; but sealift will inevitably carry the bulk of our reinforcement and resupply material as it has in past crises. (55)

Strategic Mobility: A New Era

Today, without the employment of commercial lift (air or sea), many argue that no such triad (airlift, sealift, and prepositioning), per se, exists--it simply becomes a question of comparing advantages with disadvantages while prioritizing the urgency of need with the availability of resources. For example, the required time frame for initial deployment to a major NATO war is within ten to fourteen days (54;196:28). This initial fourteen-day period is significant because the first sealift will just begin to arrive with large quantities of equipment and resupply materiel at the end of that period. If MAC worked around the clock and was supplemented with the CRAF's 413 passenger and cargo aircraft, it would take 68 days to complete the initial deployment mission without prepositioned equipment in Europe (196:28). With the prepositioning of the

equipment for three divisions in Europe, the deployment time is reduced to 28 days (196:28). Herein lies the dilemma. Does the US preposition assets or does the US rely more emphatically on the current lift capability of its air and sea forces? Moreover, does the U.S. military want organic lift or does it lean toward the assistance of commercial lift? Organic lift is the transport capacity of a military aircraft, or group of military aircraft, built into or specially adapted to the structure of a given military organization (123:298,362). If commercial lift is used, the question of US flag or foreign flag becomes an issue.

Three stages of defense, essentially, are envisioned for a US warfighting strategy in any major overseas confrontation. In the first stage, in-place forces will execute a forward defense. Containment of the enemy until second stage forces arrive in the form of rapid airlift reinforcement is the goal. Initial airlift support is expected to be dedicated to the movement of initial forces identified in the supported commander's time-phased force deployment list--in theory, the highest priority combat elements needed to quickly augment the in-place forces. To a certain degree, these combat elements will marry up with overseas prepositioned equipment and/or critical cargo shipments which must arrive from other theaters during the first ten or so days of the conflict--before sealift can deliver them. This massive quantity of requirements, after

combining the in-place forces, prepositioned materiel, and airlift augmentation, can not be supported in the short term. Such massive requirements will only arrive after the third stage begins--the strategic sealift of the great bulk of equipment and supplies required to sustain combat capability over a long period. As will be pointed out, each component of the strategic mobility triad possesses distinct advantages and separate responsibilities with regard to this overall strategy. A closer analysis reveals their respective strengths and weaknesses.

Advantages and disadvantages exist for all three elements of the strategic mobility triad. Obviously, airlift is fast and flexible. It is capable of getting assets very close in proximity to the need. Its downside is expense and limited cargo weight and size capacity. Sealift is relatively inexpensive and capable of large size/tonnage, but it is also slow compared to airlift and limited to major seaports or adequately constructed minor ports (258:6-7). Prepositioning, likewise, has its pros and cons. For example, prepositioning reduces the cost of potentially large shipping losses from submarine and air attack while, on the other hand, prepositioned storage sites are clearly vulnerable to enemy attack and subsequent loss. A closer look at the components of this important triad is warranted.

Airlift

Deterring war across the conflict spectrum, assuring war outcomes which do not compromise our national interests, and improving alliance cohesion are all goals dependent upon America's ability to project forces (257). US airlift

capability continues to play a key role in the effectiveness of power projection. It would be prohibitively costly, if not totally impractical, to maintain an adequate defensive force at each location where a potential enemy may attack. Since an enemy's advantage of surprise can be blunted by a quick and decisive response, strategic airlift is the only alternative to accomplish US force projection the first few critical days of any conflict or war. Desert Shield is a case in point. In the first four weeks of the operation, 1,904 airlift sorties delivered 60,270 troops and 43,561 tons of equipment and supplies (169). By mid-March 1991, Military Airlift Command had delivered more than 544,000 personnel, 2.4 million tons of equipment, 4.2 million tons of refined petroleum products, and more than 500,000 tons of food and supplies (1:30). When timely delivery is necessary, there is no substitute for airlift (97:4-1).



FIGURE 14: USAF Seal

US military strategy requires the capability to deploy forces rapidly and then sustain them. Under such conditions, airlift makes a valuable contribution to the national defense for three basic reasons (249:1):

1. Effective airlift amplifies the deterrent effect of combat forces by allowing the same combat force to be effective against a variety of potential threats.
2. Airlift is a highly visible element of national defense capability. The extent to which a national defense force in fact deters aggression depends, in significant measure, on how a potential adversary perceives [America's] defense capability. If a potential enemy is aware the reaction time of [America's] combat forces is such that launching an attack will not be worthwhile, they will not launch such attacks. Thus, the credibility of [America's] deterrent capacity is greatly enhanced by airlift.
3. The existence of airlift forces permits the US to have a substantial part of its general purpose forces within the CONUS.

Through the years, the USAF has developed an impressive array of airlift capability to support strategic mobility requirements. Three important components of America's historical airlift capability requires a closer examination: the Air Transport Command, the Civil Reserve Air Fleet, and the Military Airlift Command.

Air Transport Command. The accomplishments of the Army Air Forces' (AAF) Air Transport Command (ATC) were vitally instrumental in making America's air operations triumphantly possible. The command faced



FIGURE 15: ATC Insignia

many challenges, but in the speed of its development, in the scale of its operations, and in its emphasis on the movement of freight rather than personnel, it was unprecedented. The development of a world-wide system of air transport was certainly not least among such accomplishments. Transport aircraft was not afforded the glamour savored by fighter or bomber aircraft. Nevertheless, the transport plane added a new dimension to the art of warfare, and around its varied capacities the AAF built an air transportation system such as had never before been envisaged. That system, and its functions, soon became synonymous with the organization which controlled it, the Air Transport Command. ATC was one of the most important, although least heralded, Army Air Forces commands in World War II (181).

Air transportation, as we know it today, was virtually nonexistent before World War II, with the exception of occasional passenger services maintained by commercial air lines. The Ferry Command, inaugurated on 29 May 1941 by the Army Air Transport Command, was originated in response to the passage of the Lend-Lease Act on 8 March 1941 (212:13). The task assigned the Ferry Command was a simple one, at least theoretically--fly (ferry) American-made planes to England. The Commanding General of the AAF at the time of Germany's invasion of Poland on September 1, 1939, was General Henry (Hap) Arnold (106:152). Upon conferring with Colonel Edgar S. Gorrell, chairman of the Air Transport

Association (ATA) and current Chief of Staff General George C. Marshall, a decision was made to implement a 1936 scheme for mobilizing the country's air lines. The ATA was formed by the commercial air lines to act as liaison between the military air services and the commercial lines.

Problems existed. The 1936 mobilization plans, later revised in 1939, were inadequate. The war with Japan and Germany was global. For example, an urgent need existed to simultaneously reinforce Hawaii, the US west coast, the Panama Canal Zone, and Alaska. Iceland required American troops for defense purposes, as did the United Kingdom. Planes were needed in the Caribbean. Island bases protecting communication lines with Australia had to be secured. The War Department made it quite clear that Colonel Gorrell would be facing many such problems through mobilization efforts. He was told (37:5),

We are going to need men to fly critical equipment and key personnel across the whole of the civilized, and a good part of the uncivilized world. They will have to be experienced men who can beat the meanest weather in creation, over routes as yet unmapped. Some of them will have to fly the Pacific to jungle airstrips on pin-point islands. Others will have to take off from Maine potato fields or Canadian farmyards, come down for fuel on a Greenland glacier, locate Iceland through hundred-mile gales, and hit England in the eye without radio aid. There will be few concrete runways, few hangars, few spare parts, and a dearth of maintenance equipment. More often than not, there will be inadequate weather reports at least in the beginning. There may quite possibly be some sharp-eyed enemy fighter pilots to dispute our plans.

In December 1941, after the attack on Pearl Harbor, the US went to war with Japan and Germany. The Air Transport

Command, as such, did not exist. American factories were producing fighters and bombers--not a single airplane specifically designed for cargo transport was in use in the US. The Army Air Forces had to convert other aircraft types into a rather unimpressive transport fleet. Domestic and US-operated international air lines accounted for 434 planes before the attack on Pearl Harbor (37:6). Most were Douglas DC-3s, first used in 1936, capable of carrying 21-24 passengers and a crew of three. Other planes available for military cargo transport service included TWA's four-engined Boeing Stratoliners, Pan American's Boeing 314 Clippers capable of non-stop flight across the Atlantic, Lockheed Lodestars, Sikorsky Flying Boats, Boeing 247s, Douglas DC-2s, Lockheed 10s, and Martin Flying Boats (37:6).

On 20 June 1942, at the direction of President Roosevelt and with General "Hap" Arnold's issuance of General Orders No. 8, the Air Transport Command came into existence in succession to the Ferrying Command (3:1;106:60;157:153). No pomp and circumstance accompanied its origin. In the broadest sense, the ATC insignia--a futuristic airplane transposed upon the globe--epitomized the ideals girding the origination of the ATC. The dot-dash symbols in the upper left segment of the insignia spell the letters AFATC (refer to Figure 15).

Strategic air transport service was the essence of ATC's creation. ATC's all-encompassing purpose was to

provide long-range air transport from the home front to the battle areas of the world on predetermined and established schedules--schedules established at the direction of the War Department. Effective 1 July 1942, the new Air Transport Command was given the following sweeping responsibilities:

- a. The ferrying of all aircraft within the United States and to destinations outside of the United States as directed by the Commanding General, Army Air Forces.
- b. The transportation by air of personnel, materiel, and mail for all War Department agencies, except those served by Troop Carrier units as hereinafter set forth.
- c. The control, operation, and maintenance of establishments and facilities on air routes outside of the United States which are, or which may be made, the responsibility of the Commanding General, Army Air Forces. (3:1;44:79;48:362)

ATC's mission was threefold. First, the Ferrying Division (replaced the duties of the old Ferry Command) delivered planes of all types from factory production lines to awaiting customers. Under Lend-Lease, many of the customers were Allied European nations fighting Germany. Operations assigned to the Ferrying Division were, more or less, global in nature. Men, and later women, were flying single- and double-engine fighters, as well as light, medium, and heavy bombers to a variety of far-away places, getting there with minimal mishaps, and returning by air express to repeat the job.

Speaking of women in service, the Women's Air Force Service Pilots (WASPs) did their part. The "first group of graduates were ready for assignment to the ATC in May 1943" (51:31). WASPs flew many of the lighter, faster airplanes

from the factories to modification centers and coastal shipping points. By June 1944, WASPs were ferrying "forty-four different types of airplanes for the ATC, doing courier duty, piloting multi-engined ships and target planes at AAF schools, and performing a score of other important tasks for the Army Air Forces" (37:18). In a 27 month period, female pilots ferried 12,650 airplane movements (51:31). In December 1944, the WASP organization was deactivated.

Another mission of the ATC was to establish, with help from the commercial air line industries, transitional training schools. Here, students of the many Army flying schools could be given post-graduate work (transition) in transport plane operations. A final mission assigned the ATC was to lay out and maintain a web of air routes. Each route was to incorporate fields, maintenance shops, and the various and sundry "paraphernalia of modern air service" (37:18). Anything required to permit the transportation of cargo, mail, and personnel to any part of the world in which US forces were, or would be, operating was to be considered. ATC's job was to pick up existing routes and bits of routes pioneered by adventurous fliers and assemble a network of air lines to "girdle the earth" (37:20). Existing airfields were enlarged. New ones were marked out. Maintenance crews were soon shipped or flown to such places as the north and south Atlantic, the Middle East, the north and south

Pacific, and other remote parts of the globe in which ATC planned to operate.

Brigadier General Harold L. George commanded the newly acquired fleet of converted bombers and borrowed passenger liners (2:60;107:97;212:347). With the passage of time, ferrying became less important in ATC, but air transport, conceived as a strategic service for the delivery of critical items of equipment and supply to combat areas according to an overall view of their needs, was one of the more significant logistical developments of World War II. It was through the ATC that the Army Air Forces established its claim to recognition for the distinguished performance of still another independent mission. With the development of its overseas wings for the direction of ATC operations, the command at war's end constituted a considerable world-wide force.

Within ATC itself, the organization was broken down into divisions to reduce the global reality into workable, less complicated components. The newly created Air Transport Command consisted of two main divisions--the Ferrying Division and the Air Transportation Division, corresponding roughly to the two primary responsibilities of the command. Colonel William Tunner commanded the Ferrying Division, taking charge of all ferrying operations. Colonel Robert J. Smith commanded the initial cadre of 35 officers transferred from Air Service Command's Air Cargo Division to

the Air Transportation Division. Upon Colonel Smith fell the responsibility for providing the "United States Armed Forces and those of the United Nations, with swift, dependable, world-wide transportation by air for the movement of vital passengers, cargo, and mail wherever and whenever needed" (51:15).

Under a subsequent process of reorganization, the command was further broken down into five major field organizations, referred to as "wings." Initially known as the 23rd through the 27th AAF Ferrying Wings (48:363), more suitable and geographically descriptive names were soon secured. On 5 July 1942, the five wings were reintroduced as the North Atlantic Wing, the Caribbean Wing, the South Atlantic Wing, the Africa-Middle East Wing, and the South Pacific Wing (48:363;147:54). The North Atlantic Wing, commanded by Brigadier General Benjamin F. Giles, was headquartered on the east coast at Presque Isle in Maine. The wing's jurisdiction included air routes between northeastern US and the United Kingdom by way of Canada, Labrador, Greenland, and Iceland. General Giles was responsible "for all operations, facilities and installations [along the North Atlantic route, including] all meteorological and communications systems and personnel pertinent to the operation of this activity" (51:94). The Caribbean Wing, commanded by Colonel Paul E. Burrows and headquartered at West Palm Beach California, had immediate

direction over activities in Florida and the Caribbean area (51:96). Activated on 19 June 1942 (44:112), its original jurisdiction embraced only the mainland bases and Borinquen Field on Puerto Rico. In 1943, the wing's limits were extended south to the boundary between French Guiana and Brazil. The Caribbean Wing's primary responsibility remained that of managing the aerial ports of embarkation on the mainland. The South Atlantic Wing, commanded by Brigadier General Robert L. Walsh, was headquartered overseas at Atkinson Field, British Guiana (later moved to Natal, Brazil). Activated on 26 June 1942 (44:112), the wing's original jurisdiction extended down from Trinidad along the Brazilian coast to Natal and across the South Atlantic as far as Africa. It was later stretched eastward to India. The Africa-Middle East Wing, commanded by Brigadier General Shepler W. Fitzgerald and first headquartered overseas at Cairo Egypt, was soon moved to Accra in Britain's Gold Coast Colony. Activated on 27 June 1942 (44:112), the wing's authority encompassed a territory of vast distances--from Accra on Africa's west coast to Karachi, India--the main air route extending nearly 6,000 miles. Following the invasion of North Africa and the extension of ATC activities into that area, the African jurisdiction was divided on 15 December 1942 into two wings: the North African Wing and the Central African Wing (44:112). The South Pacific Wing, activated on 23 June 1942

(44:112) and headquartered on the US west coast at Hamilton Field California, orchestrated an aerial marathon through Hawaii to Australia, encompassing a multitude of the south Pacific islands. In July 1944, the South Pacific Wing was divided into three new wings: the Southwest Pacific Wing, the Central Pacific Wing, and the West Coast Wing (3:8;51:192). The Southwest Pacific Wing was to control operations within that theater as well as the Southwest Pacific inter-theater terminals (3:8). The Central Pacific Wing was to control all ferrying and inter-theater traffic, particularly the medical air evacuation between Hawaii and the Marianas (3:8). The West Coast Wing was to control all ATC terminals and ports of embarkation in the US and be responsible for the preparation of all trans-Pacific ferry and transport movements for overseas flight (3:8).

Other wings, or extensions of wings, soon followed. Among them, the Alaskan (North Pacific) Wing, formally activated on 5 October 1942 (44:112) and commanded by Colonel Thomas L. Mosley, was headquartered at Edmonton Alaska. The wing's jurisdiction covered the Canadian Northwest, Alaska, and the Aleutian Islands. The India-China Wing, commanded by Colonel Edward H. Alexander, was organized and activated on 1 December 1942 (3:4;44:112; 245:61). The primary task assigned to this wing was the uninterrupted support of critical cargo and personnel across the Himalayas from Assam to the Chinese Army and active US

air forces operating in China. The Tenth Air Force Group, which operated under the theater commander, was the first to attempt this "Hump" operation. Beginning with 36 C-47s, the wing was able to lift 1,226 tons of cargo over the "Hump" in its first month of operation (3:4). Within 12 months, the wing delivered, on average, more than 12,000 tons, and by December 1944, the India-China Wing delivered more than 34,000 tons per month (3:4). Between December 1942 and V-J day, the ATC wing airlifted a grand total of 721,700 tons of cargo to China (3:4). Put more succinctly, the function of the ATC India-China Wing was to carry "Aid to China" (51:136). On August 1, 1944, the wing was redesignated as a division and subdivided into four new wings: the Assam Wing, the India Wing, the Bengal Wing, and the China Wing (23:20). The European Wing was activated on 5 January 1943 (44:112). The North African Wing, organized and activated on 15 December 1942 (44:112), soon found itself responsible for the preservation of America's main transport route into and out of Middle East bases such as Cairo and Karachi. Other responsibilities include the air evacuation of vast numbers of wounded soldiers, and the massive redeployment efforts after the Allied defeat of Germany on V-E day. Finally, the Domestic Wing, first headquartered in Washington DC and later moved to New York, was charged with supervision of all ferrying activities within the United States. Functions were divided geographically according to

need through subordinate sectors. The six sectors and respective headquarters follow: Northwest Sector, Seattle Washington; California Sector, Long Beach California; Midwest Sector, Grand Prairie Texas; Nashville Sector, Nashville Tennessee; Detroit Sector, Detroit Michigan; and the Northeast Sector, Baltimore Maryland (51:10). All in all, nine divisions--eight foreign and one domestic--encompassed ATC's globe-encircling operations (107:147). At the command's greatest extension the divisions were: North Atlantic, European, Caribbean, South Atlantic, North Africa, Central Africa, India-China, Pacific, and Ferrying Divisions (157:260). ATC was "guaranty, on a global scale, that no United Nations general need lose a battle for lack of a horseshoe nail--or for a few medium tanks" (245:159).

ATC's initial military strength approximated 11,000 officers and enlisted men (51:19). Within nine months, its strength had risen to more than 60,00 personnel and by August 1944, the figures approached 125,000 personnel, 80,000 of which were stationed overseas (51:19). At war's end, the grand total exceeded 200,000 personnel. Similar growth was experienced in numbers and types of aircraft. At the end of 1943, ATC possessed over 1,000 transport aircraft of all types. The number tripled within one year to 3,000 aircraft, and by war's end, assigned transports exceeded 3,700 aircraft (51:19).

The types of aircraft which formed the backbone of the ATC's transport fleets were the Douglas C-47 Skytrain, the

Curtiss-Wright C-46 Commando, and the Douglas C-54 Skymaster. The Douglas C-47 Skytrain was a military cargo version of the Douglas DC-3 (a standby of the commercial airlines for a number of years before Japan's attack on Pearl Harbor). The reputation of the C-47, a steady and proved aircraft accommodating a crew of four or five men, was "hardly eclipsed even by the more glamorous of the combat planes" (50:224). Considered the workhorse of the air, a C-47 could be found everywhere. And everywhere, it did its job dependably. Before the war's end, 10,000 DC-3 type airplanes (roughly 50% of the transport planes received between 1940-45) had been added to AAF's inventory (50:224).

The Curtiss-Wright C-46 Commando was an unproved commercial transport modified for military service. It too was a twin-engine monoplane. With a maximum cargo capacity of 15,000 pounds, it was much larger and heavier than the 10,000 capability of the C-47. Because engineering difficulties persisted, the AAF accepted only 3,144 C-46 aircraft by August 1945 (50:224).

The Douglas C-54 Skymaster became WWII's preferred transport. Commercially known as the Douglas DC-4, the C-54 was predominantly used on ATC's long-distance hauls. The C-54, strictly a transport and cargo plane, modified for troop carrier purposes, was used extensively on the "Hump" route to China. By war's end, only 35% of ATC's planes were of the prewar DC-3 type. About 30% were C-46s capable of carrying 50% more cargo than the DC-3. Twenty percent were

the C-54, whose four engines could take a load of three tons across the Atlantic Ocean with only one stop for refueling. The remaining 15% fell among ATC's first choice of converted bombers--the C-87s, a cargo version of the four-engine B-24 Liberator bomber (265:164).

On the third anniversary of ATC, May 1944, the original two officers had increased to 20,000; the initial staff of four enlisted men had become a force of 88,000; from one clerk at the beginning had grown a force of 20,000 civilian employees on the domestic staff alone (86:13). During March of 1944, ATC flew 29 million miles ferrying military aircraft, 20 million miles in transport service, most of it abroad, and delivered 60,000 personnel to strategic destinations (86:13). The regular international air routes had mounted to an all-time high of 180,000 miles (265:159).

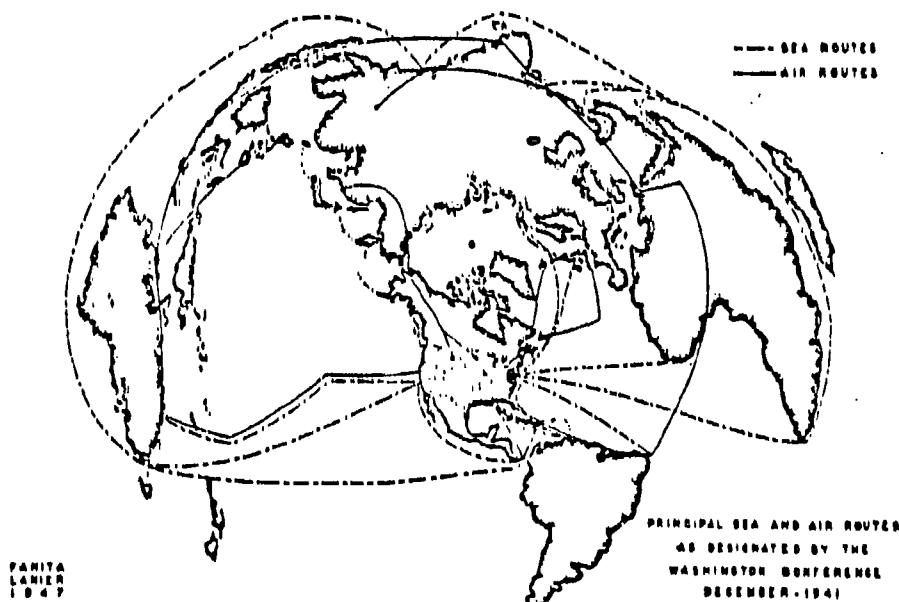


Figure 16: Principle Sea and Air Routes (48:311)

In July 1945, one month prior to the termination of hostilities, ATC transported approximately 275,000 passengers and hauled almost 100,000 tons of mail and freight. Of these totals, "less than 50,000 passengers and slightly more than 3,300 tons of mail and cargo were attributable to operations within the United States" (51:19). Annual deliveries of ferried aircraft between 1942 and 1945 were astounding--30 thousand, 72 thousand, 108 thousand, and 57 thousand, respectively (51:19). All of this in but four brief, hectic years.

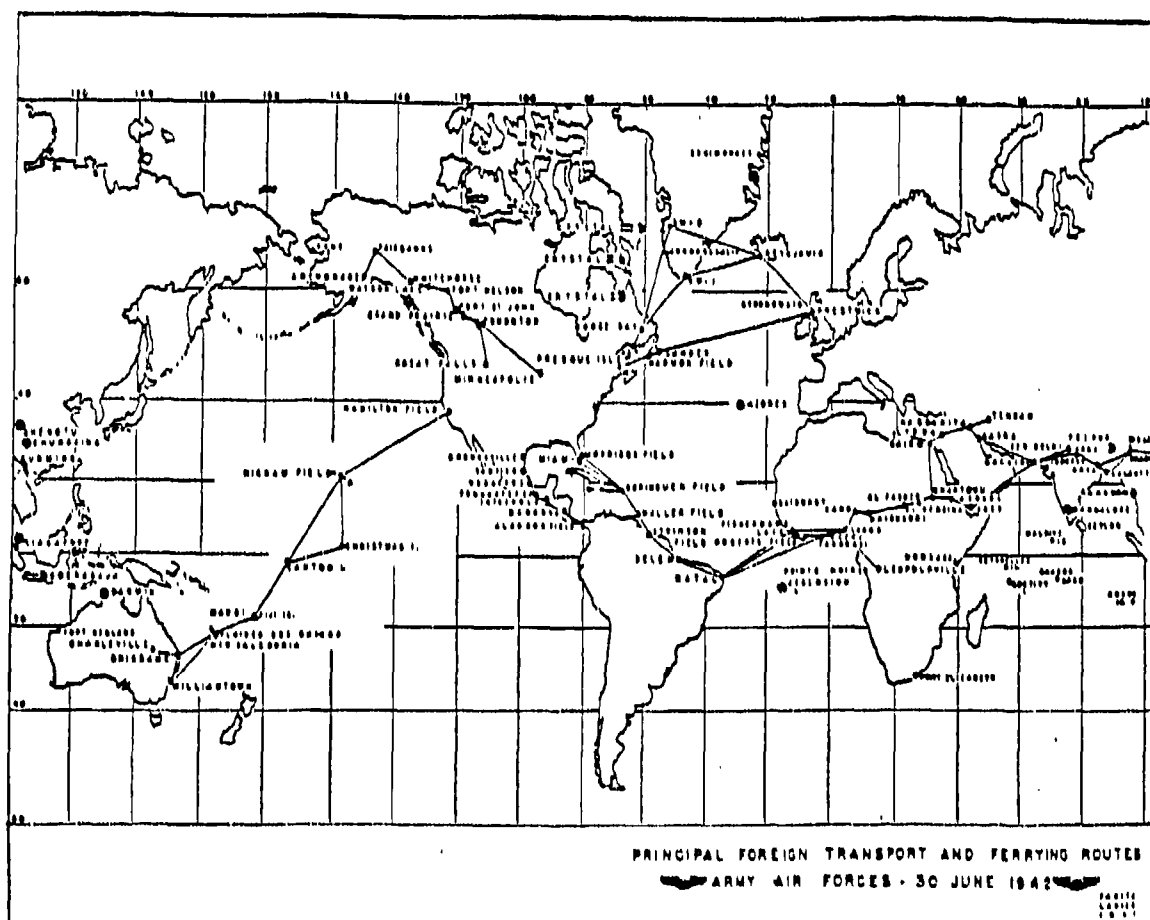


Figure 17: Principle Foreign Routes (48:328)

After the Japanese attack on Pearl Harbor, ATC's responsibilities multiplied considerably. Some of the new tasks involved: transporting troops to forward bases; moving a complete field hospital to Alaska in 36 hours; flying thousands of tons of cargo over the "Hump" (the jagged, 30,000 foot peaks of the Himalayas) into free China; evacuating some 10,000 wounded from overseas to the states between January and July 1944; transporting bombs and ammunition in emergencies; delivering V-mail, blood plasma, and medical supplies; carrying needed parts for aircraft, tanks, ships, and submarines to distant places; getting a rush shipment of grenades to Guadalcanal where they were needed desperately; returning to America with many materials vital to war production, such as block mica from India, rubber seeds from Liberia, tin and tungsten from China (for Principle Foreign Transport Routes, refer to Figure 17). ATC was organized with a single objective--furthering the winning of the war.

The end of the war in Europe brought ATC its biggest single job--the assignment to bring home 600,000 soldiers from the European and Mediterranean theaters. The "Green Project" as it was coded, began in May 1945 and at its peak was returning 50,000 soldiers a month (51:7;265:164). Forty percent of the soldiers were brought back via Casablanca and Dakar across to Natal and up to Miami. Most others arrived via the Azores; only a few were redeployed by the North Atlantic route whose short hops were reserved for the

redeployment of bombers. Predominantly, the Green Project used four-engine Skymasters on the transatlantic journeys, but on the shuttle from Natal to Miami two-engine planes were used (265:163).

In the spring of 1945 (April 6) on the island of Okinawa, Shuri Ridge (where the Japanese staged their supreme defense of Nahu and the southern section of the island) erupted with activity. The Tenth Army battled there. It was there, too, the Tenth Army ran perilously short of mortar shells at a critical stage in the battle. An urgent message was transmitted to the AAF's Air Transport Command requesting 200 tons of mortar shells flown in from Hawaii. Japan was a 28 hour flight from Hawaii--time was of the essence. While passengers, no matter their priority, and other cargo waited, every Pacific-based C-54 Skymaster was diverted to Hawaii for a load of mortar shells destined for Okinawa and the stranded Tenth Army. Wounded were flown back to Hawaii on the return trips. The mission was accomplished in a matter of hours, not days. General Simon Buckner, Tenth Army commander, responded with the following radiogram:

The efforts of all concerned to complete the air delivery of 36,000 rounds of .81 mm mortar shell requested by me on 20 May [1945] have contributed greatly to the success of our troops in breaking Jap[anese] resistance on the Shuri position. . . .Without the expeditious delivery of this ammunition our mortars would have been silenced and our infantry deprived of much needed fire support. . . . The thanks of all ranks in the Tenth Army go to all who contributed to the successful completion of this difficult task. (3:9;105:653)

Lieutenant General Harold George, commander of the ATC, saw a lesson in this effort. In his article, "The ATC, Here to Stay," General George cited this incident "to show how the transport plane has earned a spot on the runway alongside the fighter and the bomber as an implement of offensive warfare" (105:653). General George was convinced this incident was "one of the important aeronautical lessons of World War II. . . . Fighters, at 400 miles an hour, and bombers, even the gigantic B-29s, [were] not enough" (105:653). Enough praise could not be displayed. It remains for the transport plane to fulfill the task of

split-second military supply, as illustrated by the mortar shells so critically needed in Okinawa; to evacuate the sick and wounded; to carry the mail, that indispensable builder of morale; to transport regiments of troops with all their equipment, as was done on more than one occasion in the case of Chinese forces. . . . Once the war was won, the fighters and bombers had finished their job; not so the transport plane. (105:682)

There remained the task of redeployment. Planes were landing and taking off from 336 different foreign bases to meet the flow of homeward bound fighting men (105:682).

General George concluded his article in certainty (105:682):

. . .the Army Air Forces will maintain within its own structure a small but effective Air Transport Command. The wisdom of such a course, in my opinion, is obvious since air transport is an important component of air power.

When the Air Transport Command was established, some airline executives had acute misgivings that ATC might portend government operation of US international air routes. General George promptly declared the Air Forces had no such

design, and he repeatedly promised ATC would abandon the field when the war ended. He declared,

ATC is going to quit the business just as soon as the war is over. ATC will carry on until the commercial lines get set to handle the required volume--although of course the Air Forces will maintain skeleton air transport facilities to serve Army bases and outposts. My policy would be to encourage the commercial carriers in the early stages by throwing enough traffic their way to see that they have an economic load factor. (265:213)

One of the first post-WWII jobs of ATC, to avoid duplication of effort, was to merge its operations with those of the Naval Air Transport Service. Reorganization took a long time. On 1 June 1948, in its final form, the new organization--Military Air Transport Service--was launched; and an old workhorse of an organization was gone, save those memoirs etched in the annals of World War II.

Civil Reserve Air Fleet (CRAF). To help meet its wartime airlift requirements, the US relies heavily on the nation's civil sector in times of war or national emergency (See Table 11). The Civil Aeronautics Act of 1938 is considered the cornerstone of airlift policy. It called for the encouragement and development of an air transportation system properly adapted to the present and future needs of the national defense. Airline industry cooperation in military airlift began in World War II. Under contract with the Air Transport Command and the Naval Air Transport Service, the commercial airlines delivered more than four billion passenger-miles and one billion cargo ton-miles while performing more than 1.4 million flying hours for the

military overseas (45:56). During the 1948-49 Berlin Airlift, US airlines flew more than 270 transatlantic support flights (45:56). During the Korean War, the airlines carried 67 percent of the passengers, 56 percent of the freight, and 70 percent of the mail airlifted as a result of the conflict (45:56). At the height of the Vietnam War, the airlines were lifting an estimated 88 percent of the military passenger traffic between the US and Southeast Asia (45:86). During those years, it is further estimated the commercial carriers were airlifting more than 2,500 passengers and 180 tons of cargo daily (45:86). MAC airlift capability can be substantially increased through augmentation by civilian crews and commercially-owned equipment of the Civil Reserve Air Fleet. A unique and significant part of the nation's mobility resources is provided by the CRAF which was created in February 1951 when President Truman issued Executive Order 10219 (16:13). Truman's executive order charged the Department of Commerce to formulate plans to use civil aviation to help meet emergency needs. A memorandum of understanding between the Department of Defense and the Department of Commerce implemented the order. In 1952, DOD published a plan to formally establish the Civil Reserve Air Fleet (27:35). In the CRAF program selected commercially-owned aircraft are contractually committed to MAC under certain specified National Emergency conditions. These aircraft receive modifications permitting the transport of military cargo in

times of emergency when airlift requirements exceed organic MAC capability. Modifications included the addition of a nose visor or side-loading cargo-access door as well as a strengthened floor. In addition, removable cargo-handling kits, rollers, and rails compatible with the USAF's 463L cargo handling system were provided. The US Government pays for the additional costs involved in making the civilian aircraft convertible to a cargo-carrying role, as well as the additional operating costs associated with using the slightly heavier planes. In return, the air carrier agrees to keep the aircraft available for use in an emergency throughout its projected 16-year life. If the aircraft is sold or destroyed before the end of the 16-year period, the carrier would reimburse the US Government (45:56-58). Currently, on a daily basis, CRAF aircraft augment MAC capabilities "by flying contract missions to move [DOD] personnel" (176:78).

TABLE 11
Civil Contribution
to the
DEFENSE STRATEGIC CARGO MOVEMENT CAPABILITY
(under wartime conditions)

	<u>PERSIAN GULF</u> [*]	<u>NATO</u> ^{**}
AIRLIFT	30%	42%
SEALIFT	79%	96%
CONUS LAND/SEAPORTS	99%	99%

^{*}CRAF II and availability of SRP is assumed.

^{**}CRAF II and ship requisitioning authority is assumed.

Source: (234:152)

Presently, the program consists of three stages. In Stage I, aircraft can be committed by a call-up by MAC's CINC. The civil aircraft committed to this stage can be used to maintain military aerial port levels within acceptable limits thus freeing military aircraft to support the existing contingency. Stage II may be activated by the Secretary of Defense to provide airlift capability for a major contingency requirement not warranting national mobilization. Stage III can be activated by the Secretary of Defense only after a national emergency has been declared by the President or the Congress (45:57).

Military Airlift Command. The Military Airlift Command (MAC) is the USAF component of the US Transportation Command (TRANSCOM). General H. T. Johnson currently serves as commander-in-chief of both organizations, with headquarters at Scott AFB IL. MAC operates 13 bases in the CONUS and controls facilities at Lajes Field in the Azores and at Rhein-Main AB Germany. MAC's global missions are accomplished through an airlift system comprising some 78,000 personnel and 800 aircraft at more than 300 locations in 25 countries (177:85). In addition to airlift services provided as part of the US strategic mobility triad, the command provides a number of specialized services that support USAF and DOD operations. For example, the Air Rescue Service provides worldwide combat rescue forces and humanitarian assistance when called on by civilian agencies. The Aerospace Audiovisual Service is the USAF's single

manager for combat, operational, and technical audiovisual documentation. The Defense Courier Service transports and escorts time-sensitive, highly classified, national security material worldwide. Another vital MAC mission is that of aeromedical airlift. In a typical year, highly trained medical technicians, flight nurses, and aircrews transport nearly 80,000 DOD patients on some 4,500 C-9 Nightingale, C-130 Hercules, and C-141 Starlifter missions.

MAC currently (1991) maintains the following active airlift assets: 254 C-141 Starlifters, 83 C-5 Galaxys, and 336 C-130 Hercules (refer to Table 10). Additionally, the Air Force Reserve and Air National Guard forces collectively provide about sixteen C-141s, 44 C-5s, and 380 C-130s (246:48-49). Just under one-half of MAC's organic airlift capability is provided by Reserve and Guard units. The C-130 Hercules, equipped with four turboprop engines, can accommodate 92 troops, 64 paratroops, 74 litter patients, or 50,000 pounds of cargo (268:152). The C-141 Starlifter is a four-engine, long-range, air-refuelable, high-speed transport designed to carry personnel, vehicles, and cargo over intercontinental distances. It can accommodate 200 fully equipped troops, 155 paratroops, 103 litter patients, or 89,000 pounds of cargo (268:153). The C-5 Galaxy is a four-engine, long-range, air-refuelable, logistics transport designed to carry heavy payloads. It features full-width fore and aft cargo openings, integral forward and aft loading ramps, and a kneeling landing gear to facilitate

loading. It can carry 345 fully equipped troops or 291,000 pounds of cargo (such as two M60 tanks or three CH-47 Chinook Helicopters) over transoceanic ranges (268:149). The capabilities of this sizable air fleet are impressive; nevertheless, they are not sufficient to meet the airlift requirements of America's most demanding war plan scenarios.

Strategic Airlift Shortfalls. Measured in several ways, the most common expression of airlift capability is in millions of ton miles per day (mtm/d). This measure is a multiple of the capacity to move one ton of cargo by air a distance of one mile per day. Though this standard of measurement does not take into account such other constraints as aircraft and crew exhaustion, weather, availability of airfields, and overflight rights, it is a useful gauge of airlift requirements and capabilities. It has been accepted by the Congress of the United States and the Joint Chiefs of Staff (JCS) as "the product of the numbers of aircraft, daily aircraft utilization rates expressed in hours, the speed of the aircraft measured in nautical miles per hour, and the available load measured in short tons [(2,000 pounds)]" (249:22-23).

In 1979, just eight months after the establishment of the Joint Deployment Agency, President Jimmy Carter announced the US would establish a Rapid Deployment Force (RDF) in response to events in the Middle East--the US had discovered that it possessed neither a credible military

response nor the means to transport sufficient forces in a timely manner to the Persian Gulf region (156:30).

For the RDF to become a workable strategic option and an instrument of foreign policy, it first had to fulfill several demanding criteria (156:30). To begin, the RDF had to be ready, organized, and trained for combat in a variety of locations and climates. It had to be tactically and logistically workable; that is, it had to be capable of sustained combat for a minimum of 30 days without resupply or reinforcement. It had to be positioned in proximity to the area of potential crisis. Finally, the forces had to be set in motion only as the product of the timely decision-making process in the White House (138:55-59).

In 1980, the JCS specified strategic airlift requirements based on units with required delivery dates within the first fifteen days of postulated major contingencies. In the Persian Gulf, Iran, and NATO, the airlift requirements were 90 mtm/d, 102 mtm/d, and 150 mtm/d, respectively (136:17). The Congressionally Mandated Mobility Study recognized such airlift requirements were cost prohibitive. To compensate, the CMMS established as a new goal the capability to airlift 66 mtm/d which remains the current DOD goal (see Figure 18) (136:18). However, at least one senior official has declared the 66 mtm/d goal as insufficient, even when the study was written in 1981. In testimony before the House sub-Committee on Readiness in October 1988, Major General Richard J. Trzaskoma, referring

to the CMMS mandate, called it "a fiscally constrained, reasonably attainable goal and not a panacea for our airlift shortfalls" (244:21).

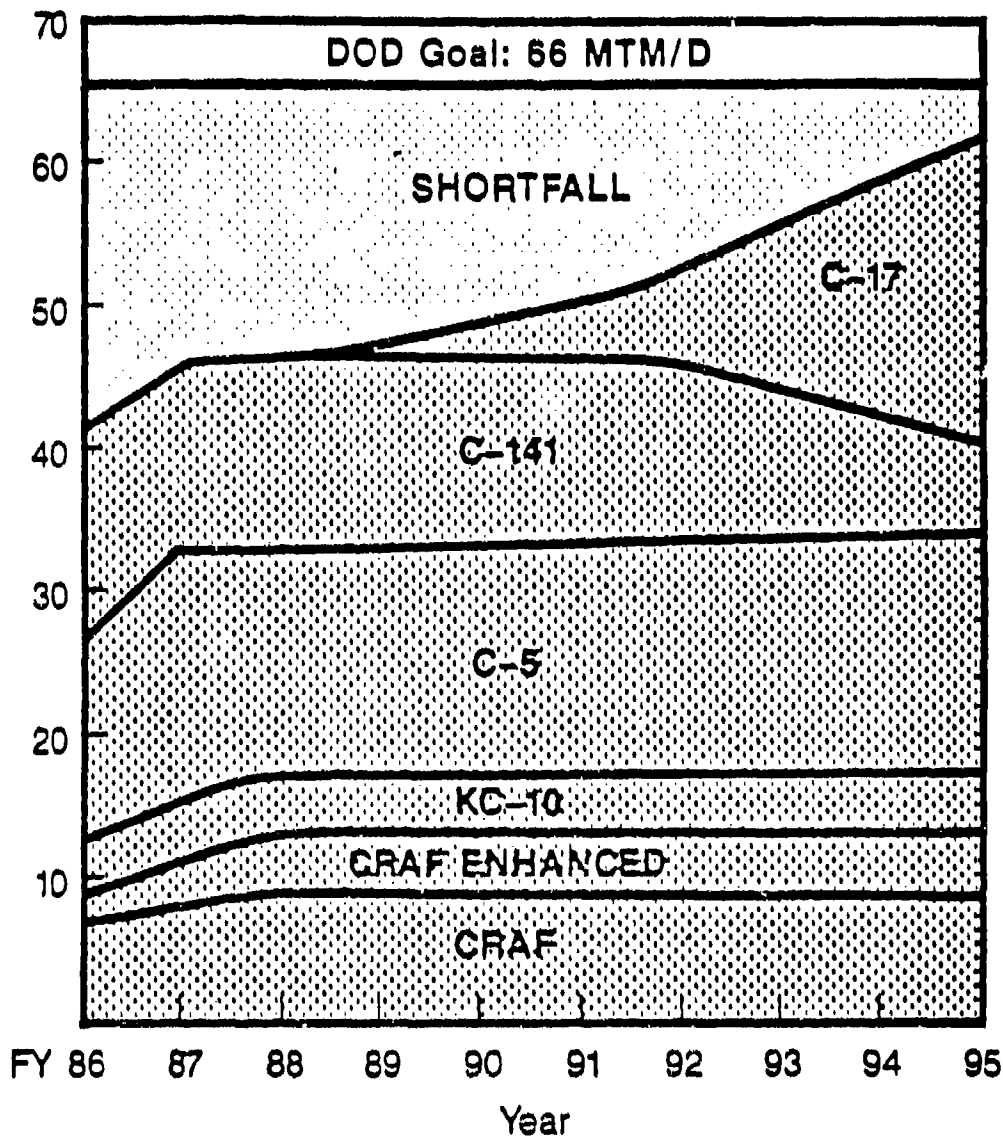
As stated earlier, MAC's current airlift force, while impressive, does not provide enough capability to meet America's increasing need for rapid mobility. In the first thirty days of a conflict, present airlift capability can support between one-fourth and one-half of the requirements, depending upon the scenario (156:30). The FY-88 funded airlift force, for example, provided approximately 45.7 mtm/d of inter-theater cargo airlift capability--well below the current DOD goal (178:69). Efforts to reduce this shortfall have proven helpful. In the early 1980s, the C-141A was stretched and modified with air refueling capability to form the C-141B, and the C-5 received wing modifications initiated in 1978 to replace the five main load-carrying wing boxes thereby extending the service life of the C-5's wings by 30,000 flight hours (268:149). Soon thereafter, the procurement of 50 additional C-5 aircraft provided much needed airlift capability faster than other alternatives at a substantially lower cost. The procurement of air-to-air refuelers, KC-10 Extenders, in the early 1980s proved invaluable--the KC-10's refueling capabilities and long range, in effect, dispensed with the need for forward basing while leaving vital fuel supplies in the theater of operations virtually untouched. Fifty-nine KC-10s are in the 1990 USAF inventory (268:153). Finally, the DOD

continues to evaluate the C-17 for enhancements to strategic airlift shortfalls. The C-17, though not currently in the inventory, is a heavy-lift, air-refuelable cargo transport which will provide intertheater and theater airlift of all classes of military cargo, including outsize (268:151). The C-17 will carry up to 144 troops, or 172,000 pounds of cargo. The C-17 will also provide the first capability to airland or airdrop/extract outsize cargo in the tactical environment. The C-17 is scheduled for initial operating capability in 1992. As Figure 18 depicts, the addition of the C-17, combined with continued enhancements of the CRAF, is projected to bring airlift capability to levels recommended by the CMMS.

US Intertheater Cargo Airlift Capability

(Funded)

Total MTM/D*



* Million ton-miles per day

As of 30 September 1986

FIGURE 18: Intertheater Airlift Summary (178:70)

Sealift

Without adequate and reliable sealift, literally none of our military plans are executable. More than 90 percent of all wartime cargo will go by sea--mostly in merchant bottoms--regardless of where the conflict is.

--Admiral Thomas Hayward

Every war in which the United States has been involved has required heavy reliance on the nation's merchant fleet. One can expect nothing different in the future. Throughout World War II, there were four organizations which controlled cargo movement by sealift: the Army Transport Service, Naval Transportation Service, the War Shipping Administration, and the Fleet

Service Forces (234:73). Oddly enough, Army and Navy organizations independently operated their shipping services (180:6). That is, until the National Security Act of 1947 gave the Secretary of Defense the authority to assign a single manager for all Department of Defense ocean transportation. On August 2, 1949, Secretary of Defense Louis Johnson issued a directive making the Secretary of the Navy the single manager for sealift and directed him to establish an operating agency within the Navy (179:24). Hence, the subsequent emergence of the Military Sealift Command (MSC), formerly the Military Sea Transportation



FIGURE 19: US Navy Seal

Service (180:6). Barely had MSC come into its own when hostilities erupted in Korea on June 5, 1950. During the Korean War, MSC delivered 87 percent of United Nations fighting forces and equipment to Korea by sea (179:24). This figure represents 3.5 million passengers and 98.1 million measurement tons of cargo (180:8). At the height of the Korean War, MSC had a fleet of 467 ships that operated around the world (234:75). The next real test for MSC was command support of the war in Vietnam.

MSC ships first came on the scene in March 1965 when the US Navy Ship (USNS) Mann transported an advance element of 2,000 Republic of Korea soldiers from Korea to South Vietnam (234:75). In June, MSC-chartered ships seafreighted US Coast Guard Squadron One--composed of 17 patrol craft--to the war zone. In August, elements of the Army's 1st Cavalry Division sailed to Vietnam (180:17). One year later, in August 1966, MSC completed the longest troop lift in US military history, transporting American soldiers more than 12,500 miles from Boston to Vietnam (234:76). MSC was making history in other ways during the 1960s.

The 1960s was a decade for change throughout MSC. During the 1960s, the US Merchant Marine underwent a technological change with the introduction of the containership. Container service helped reduce cargo pilferage, damage, and cargo handling time. For example, a single corps of longshoremen could load as much cargo on a containership in 12 hours as six to eight corps formerly

loaded on a breakbulk ship in a week (180:18). By 1969, at least 40 percent of the MSC-sponsored oceanborne cargo moved by containership (120:28). Another significant change that took place during the decade included MSC's role as an industry partner in the continued development of vehicle "roll-on/roll-off" ships. Considered specialized cargo ships in the Fleet Support Naval Fleet Auxiliary (179:23), four such ships were in the inventory by 1981. A final change of significance involved the decommissioning of troop transports during the late 1960s. Troop transports were used extensively throughout the 1960s to shuttle troops in and out of South Vietnam. As a result of the phaseout of troop transports, MSC merged its passenger and cargo divisions thereby forcing subsequent troop movements to be accomplished predominantly by air. Cargo movement, on the other hand, was quite a different story. More than 400 MSC-controlled ships delivered "nearly 181 million measurement tons of dry cargo and almost 198 million long tons of petroleum products to military customers [during the Vietnam War years]" (180:19). In one year, MSC delivered more than 32 million measurement tons of dry cargo; and in four years, 1965-1969, almost 54 million measurement tons of dry cargo as well as 7.6 million long tons of petroleum products were transported to Southeast Asia (180:18). In total, MSC moved 96% of all military cargo during that time period (179:25).

During the 1970s, MSC was given the responsibility of providing support to Navy ships at sea. Emphasis was later

focused on the operation of the Naval Fleet Auxiliary Force (NFAF). Civilian manning of Naval auxiliaries was given primary attention. It was believed that civilian manning freed highly trained military men for service on warships. The relationship between MSC and maritime industry was strengthened during the 1970s. A typical example is demonstrated through a 1978 article in Sealift:

In 1978, MSC paid nearly \$700 million to private companies for services and supplies. Some \$107.4 million was paid to operators of chartered ships and tanker operators received another \$122 million. Another \$45 million was paid to industry in fiscal 1978 for movement of crude oil for the Department of Energy Strategic Petroleum Reserve Program and \$326 million went to private carriers to move military cargo on scheduled liners. Approximately \$98 million was expended for nucleus fleet ship repairs and other engineering services. (180:23)

Intermodal service was expanded during the 1970s to provide service from the supplier to the military user over land and sea. Intermodal services were typically provided through MSC contracts. For example, MSC awarded contracts with "Alaska Hydro Train for tug and barge service, with Sea-Land Service for containerized delivery of military cargo, and with Tote for roll-on/roll-off ship services" (180:26). Finally, MSC established a new headquarters division for strategic mobility planning in 1978. This new alignment enhanced MSC's control of the fleet considerably. To begin, ships from the NDRF could be operated under General Agency Agreement by MSC (120:37). Additionally, privately owned ships from the Sealift Readiness Program, a Department of Defense program supported by the Maritime

Administration that provides for privately owned shipping companies to commit certain ships to meet DOD transportation requirements, could be called up. Finally, during times of full mobilization, resources could be expanded to include American flag shipping not under the Sealift Readiness Program, NATO shipping for deployments in support of NATO, and utilization of US owned foreign flag ships known as the Effective US Control Fleet (120:38).

TABLE 12
NATIONAL DEFENSE RESERVE FLEET
(1945-1981)

<u>Fiscal Year</u>	<u>Ships</u>	<u>Fiscal Year</u>	<u>Ships</u>
1945	5	1964	1739
1946	1421	1965	1594
1947	1204	1966	1327
1948	1675	1967	1152
1949	1934	1968	1062
1950	2277	1969	1017
1951	1767	1970	1027
1952	1853	1971	860
1953	1932	1972	673
1954	2067	1973	541
1955	2068	1974	487
1956	2061	1975	419
1957	1889	1976	348
1958	2074	1977	333
1959	2060	1978	306
1960	2000	1979	317
1961	1923	1980	320
1962	1862	1981	317
1963	1819		

Source: (179)

Merchant Marine. Since the MSC relied heavily upon the US Flag Fleet during both peace and wartime, it is important to understand the status of the Merchant Marine. The Merchant Marine Act, signed into law on October 21, 1970, was the broadest and most far-reaching piece of maritime

legislation enacted in more than 30 years. The intent of this act was to transform the US Merchant Marine into one of the most modern and highly efficient fleets in the world. The Act extended construction and operating subsidies to bulk cargo carriers as well as to scheduled carriers. Moreover, the Act allowed shipbuilders and shipowners to qualify as applicants for subsidies. However, the revitalization of the Merchant Marine fleet and the upgrading of its competitive position was slow and proved difficult in subsequent years (180:20-21;259:25-26). The total inventory of merchant vessels in the US fleet, 1,000 tons and over, decreased steadily and significantly throughout the years. Twenty years ago, 18 major US shipping companies provided more than 430 ships for service. As late as 1989, only four major US companies provided a total of 88 ships to operate in the foreign trades (34:15). The vast majority of today's fleet is laid up in mothballs in three NDRF sites: Suisun Bay, California; Beaumont, Texas; and Lee Hall, Virginia (56:3).

The current state of the Merchant Marine impacts upon the MSC strategic mobility enhancement programs and on the cost of procuring sealift transportation. MSC was established "to provide ocean transportation for the DOD, to eliminate duplication and overlapping of effort between and among military departments, defense agencies, and other components of DOD" (63:2). When the three Transportation Operating Agencies--MAC, MSC, and Military Traffic

Management Command (MTMC)--were established after the signing of the National Security Act of 1949 within the respective service structures, the defense and national transportation systems were divided into air, sea, and land segments, respectively. However, with the advent of intermodalism in the 1960s, especially containerization, the defense and national transportation systems evolved from three into two segments: surface and air. This evolution posed a serious dilemma: What agency was to manage surface movements?

MSC and MTMC have long-standing issues of duplication and overlap of functions for cargo booking and contract administration, in particularly the movement of cargo from inland CONUS installations to overseas destinations by surface modes of transportation. The resulting effect of the problems of management fragmentation, duplication, and overlap of function is threefold: increased pipeline time, increased inventories, and delayed transition from peace to wartime operations (234:97). In March 1969, Major General Lane, Commander of MTMC, was among the first to recognize the problem. In his article, "Does DOD Need One Single Manager for Transportation," he stated (159:50,53),

the development of intermodal transportation concepts will highlight the need for consolidation of government transportation regulatory authority. . . Control should be placed in the hands of one agency with authority to cut across functional transportation boundaries.

General Lane's view of the future defense transportation system was correct. Indeed, the complete elimination of

duplication and overlap of functions is necessary to decrease pipeline time, to decrease inventories, to eliminate management fragmentation, and to allow for a effective and efficient transition from peace to wartime operations. Furthermore, the integration would align the defense transportation organization with the defense and national transportation systems it manages--systems that have evolved because of intermodal concepts.

Before a critical examination of some of the strategic sealift shortfalls is conducted, MSC must be credited with a few bright spots. In the past decade, MSC added a number of ships to its fleet through three related, yet distinct, ship acquisition programs: the Maritime Prepositioning Ships (MPS) program, the Afloat Prepositioning Ships (APS) program, and the Fast Sealift Ships (FSS) program. A thorough discussion of these programs is addressed under the heading, United States Navy Prepositioning.

Strategic Sealift Shortfalls. Sealift sustained US Marine "peacekeepers" in Lebanon during the period 1982-84, supported Persian Gulf escort operations 1987-88, and routinely resupplies US forward deployed forces around the world. Future needs surely will fluctuate. New estimates of the load and optimum mix of ships therefore seem advisable.

Reliance on foreign flag cargo ships and tankers to supplement the US Merchant Marine has caused serious concern among US defense officials because of dubious reliability in

emergency situations. During the last few decades, the US has suffered a chronic decline in military and civilian shipping. The American-flagged portion of total US commerce now approximates a mere four percent (13). Not only has the number of ships available declined, shipbuilding capacity has also dramatically declined. No merchant ships have been built in a US shipyard since 1985 (230:69). The significance of that relationship should now be reassessed. So should the value of a large National Defense Reserve Fleet ("mothballed" ships with an average age of 45 years), which is costly to maintain and largely unresponsive. The necessary number and nature of specialized vessels able to navigate shallow harbors, load and unload rapidly in primitive ports, or operate along open beaches is also due consideration. US maritime strategy, unveiled in 1986 (80), addresses no region well except Europe and slights low-intensity conflicts. It, too, requires reconsideration.

Prepositioning

Prepositioning is the stockpiling of equipment and supplies at or near the point of planned use (or point of debarkation). Its purpose is to reduce reaction time thus ensuring the timely support of a specific force during initial phases of a military operation (70:533). In one form or another, prepositioning probably originated as far back in time as the Neanderthal days when some "mean, but smart Neanderthal warrior spent time thinking about his

conditions and began to stock stones, arrows, and spears in logical places for a coming battle" (200:ii). As for the USAF, prepositioning has supplemented the United States forward basing policy since the Berlin Crisis in 1961 (98:11). This crisis generated concern that the US would "experience a serious shortfall in intertheater air and sealift capability and would not be able to deploy forces to Europe quickly enough to counter a Warsaw Pact build up" (15:1). While the first US troops on the ground in the Persian Gulf (Desert Shield/Desert Storm) began depleting the 30-day supplies they carried with them, back at home the industrial base was shifted into high gear, surging production of 18,000 separate contracts for everything from high-tech munitions and spares to desert uniforms and meals-ready-to-eat (MREs). Lieutenant General Jimmy Ross, the Army's deputy chief of staff for logistics since 1987, knew the industrial base may take as long as 60-69 days to begin delivery of contracted goods. In the meantime, the US had no alternative but to raid war reserve stocks stashed around the world. "You can't get support," said General Ross, "for war reserve stocks in Congress, or even within the Pentagon, because you have to spend money to store things away which you may or may not need" (146). "Yet, during Desert Shield," he continued, "war reserve stocks literally saved us. . . .I think it may change the way we do business in peacetime" (146).

Prepositioning offers advantages over forward deployment: its successful use reduces overseas manpower requirements during peacetime; it serves as a reasonable alternative to rapid force deployment from another theater; it reduces the cost of potentially large shipping losses from submarine and air attack; and, politically speaking, prepositioning of critical stocks provides tangible proof of US commitment to the region and the host country (162:12). Furthermore, response time is significantly enhanced through the prepositioning of critical wartime assets. As mentioned earlier, the prepositioning of the equipment for three divisions in Europe reduces the deployment time from 68 days to 28 days (196:28). Furthermore, airlift, although fast and flexible, is also expensive and both size and weight-limited. Sealift, on the other hand, is a relatively inexpensive means of transporting large tonnage and/or heavy cargo but it is slow and largely limited to major seaports (258:6-7). Prepositioning of critical stocks can substantially reduce the immediate demand on critical air and sea transport resources. Although prepositioning yields important advantages, it raises questions of vulnerability and reliability.

Prepositioning does have its flaws. Disadvantages include the requirement for duplicate sets of equipment (one for training and the other prepositioned); reduced flexibility to meet world-wide contingencies; and the vulnerabilities of storage sites to attack (162:12). Fiscal

constraints are a reality. POMCUS, for example, forms the basis for rapid reinforcement efforts in Europe. POMCUS levels, though, have lagged behind anticipated needs, particularly if the "ten divisions in ten days" goal is a planning factor. According to a senior staff member of the US European Command, POMCUS levels may be expanded to meet requirements for six additional divisions and 60 fighter squadrons beyond those currently deployed in Europe "presumably before 1997" (263:35). It is difficult to be optimistic about further POMCUS increases in the coming years of defense cutbacks--especially given the recent reports that some defense items have been over-stockpiled. It should be noted the POMCUS program places a serious drain on Army resources--two sets of equipment, one prepositioned and one for training, are required. Prepositioned assets are limited not only by shortages and fiscal realities, but also by the vulnerability of the sites themselves to attacks in the early stages of conflict, perhaps even before conflict begins. For example, the range of the Soviet SS-21 missile armed with conventional warheads covers most POMCUS sites in Germany--approximately 770 such missiles are potentially available (230:67). As if this was not enough, careful consideration must be given to manpower requirements for the continued care of prepositioned assets. Furthermore, facilities must be maintained and records must be kept. These represent but a small sample of those things

requiring careful consideration where the prepositioning of US assets are concerned.

United States Army Prepositioning. To support specific mission requirements, the United States Army prepositions assets throughout the world under its POMCUS program.

POMCUS is an acronym for Prepositioning Of Material Configured to Unit Sets. Assets prepositioned under POMCUS include tanks, armored personnel vehicles, munitions, and rations. The program is designed to support six divisions in Europe for the defense of the North Atlantic Treaty Organization (NATO).

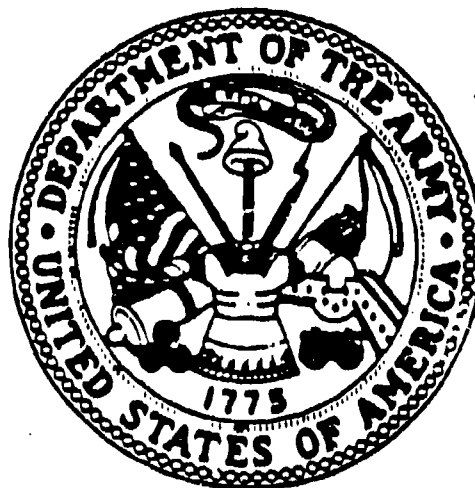


FIGURE 20: US Army Seal

The POMCUS concept was originated in 1961 in an effort to decrease the Army's need for transport services (119). The Joint Chiefs of Staff (JCS) "took action to preposition equipment for two divisions to increase the speed at which the 7th Army could be reinforced by units from the [United States]" (119). In 1978, under the NATO Long Term Defense Plan, the U.S. ultimately committed to provide ten divisions in ten days to defend Europe--four divisions permanently stationed in West Germany, and an additional six divisions deployed from the U.S. to "mate-up" with POMCUS equipment in theater. Because the equipment is stored in operational sets, everything except rations, fuel, and ammunition

(deployed with the arriving forces) is ready in one location for the arriving forces (14). Upon arrival, employed personnel have only to charge batteries, fuel equipment, and load munitions before becoming 100% operational.

The permanently stationed (forward-based) divisions are active duty units assigned duty in Germany with a full complement of men and equipment. The POMCUS equipment for deploying divisions is stored at sites in Germany, Belgium, Great Britain, and the Netherlands (14). One of four methods of storage must be used for POMCUS equipment: outside storage, conventional warehouses, controlled humidity warehouses, and bags (14). (Bags are plastic devices which serve to temporarily store equipment intended for controlled humidity warehouses currently under construction.) By 1986, according to a USA Audit Agency Report, POMCUS included 22,000 wheeled and track vehicles valued in excess of \$4.3 billion (81).

However, airlift is out of the question--it requires more than 1000 C-141 missions and hundreds of C-5 missions just to move the equivalent of one Army division (255:15). In the recent Desert Shield deployment to Saudi Arabia, American airlift capability was overwhelmed even by the pre-November deployment of two armored divisions, a mechanized division, an armored brigade, an armored cavalry regiment, two air defense artillery brigades, three field artillery brigades, and several special forces groups (224:39). Tanks, for example, proved to be a major contention. Each

US armored division fields 324 tanks while mechanized divisions field 280 tanks. By mid-November, two armored divisions and one mechanized division was deployed--a total of 928 tanks. The C-5 Galaxy, the only US transport plane which can airlift an M-1 tank, has an optimal capacity of one tank per sortie. Since there were only 127 C-5s available at the start of Desert Shield, each would have had to fly about 7.5 sorties just to deliver the initial 928 M-1s from the US--each sortie's duration approximated four days. With proper maintenance, about 60 days would have been required for the C-5s to simply deploy the initial cadre of M-1 tanks. In any event, those M-1s not prepositioned were, for the most part, sealifted, averaging 45-60 days to fully deploy to Saudi Arabia.

As illustrated, POMCUS represents a tremendous savings in the airlift required to move the same assets had they not been prepositioned. However, POMCUS cannot satisfy every U.S. mobility requirement. Furthermore, POMCUS is very inflexible--it was primarily designed to satisfy major force requirements in Europe; not the Middle East or the Pacific. Finally, as with any prepositioned assets, POMCUS is vulnerable to attack.

United States Navy Prepositioning. A Maritime Prepositioned Force (MPF) operation is the rapid deployment and assembly of a Marine Expeditionary Brigade (MEB) in a secure area using a combination of strategic airlift and forward-deployed Maritime Prepositioning Ships (MPS). The

MEB, along with a Navy Support Element, is airlifted to a rendezvous point where equipment and 30 days of supplies, ammunition, and fuel are already assembled to conduct subsequent combat operations. Enough vehicles, equipment, rations, fuel, and ammunition are prepositioned on MPSs to support three MEBs for thirty days in combat (198:8).

The Fast Deployment Logistics Ship was the predecessor to the Maritime Prepositioned Ships composing the Maritime Prepositioned Force. In 1965, Defense Secretary Robert McNamara approved a plan implementing a 30-ship Fast Deployment Logistic Fleet (248:92) only after a joint Army-Navy study of global logistics problems pointed out that such a floating supply fleet could "be placed near various hot spots on the globe so that the U.S. could rapidly send three heavily armed brigades of Marines into combat" (248:90). Each brigade consists of 16,500 personnel, 78 fixed-wing aircraft, 56 helicopters, 53 M60 tanks, 36 artillery pieces, 72 antitank weapon systems, 109 assault amphibian vehicles, 28 light assault vehicles, 400 electrical generators, 12 cranes, 625 light trucks, 500 cargo trucks, and appropriate air defense and command and control assets (235). This program was Congressionally funded in 1966 but subsequently rejected in 1967. The plan went to rest after a second attempt for funding was rejected in 1968 (248:92). It was not until 1973, after OPEC's oil embargo, that the Congress reconsidered maritime

prepositioning as a viable solution to deficiencies in strategic mobility (198:2).

Hence, it was not until the last decade that the Maritime Prepositioned Ships concept, as well as two additional programs, was conceived as a rapid response capability for the US to defend her interests throughout the world. Because these programs emphasized a global deployment capability, the US would no longer be limited to a regional focus of its military might. To begin, the US Navy acquired a 13 ship contingent through the Maritime Prepositioning Ships program in the early 1980s. The contingent carries a full range of US Marine Corps cargo, including ammunition, artillery, water, and rations. These fully loaded ships are deployed in three strategically located squadrons. Collectively, forces sail in the eastern Atlantic, the Indian Ocean (Diego Garcia), and the Pacific Ocean (Guam) (198:9). Each squadron is commanded by a Navy officer who is assigned tactical control and is responsible for off-load operations. Four or five self-sustaining commercial ships, each capable of discharging its cargo in three days, comprise each squadron (235). Each squadron remains afloat continually, projecting a global coverage. Furthermore, each squadron is capable of supporting a Marine Expeditionary Brigade (MEB) of 16,000 troops for 30 days (32:30). Prepositioning in this manner reduces strategic airlift requirements from 4,500 sorties to approximately 250 C-5/C-141 sorties at the onset of hostilities (198:15-16).

A second US Navy initiative, called Afloat Prepositioning Ships, added ten ships to MSC control in the early 1980s. These vessels are cargo ships and tankers strategically deployed and loaded primarily with US Army and USAF supplies (32:30). It should be noted this is a costly alternative to land prepositioning in that the ships, crews, and personnel required to maintain the equipment are extremely expensive. Estimated costs exceed \$25 million per ship per year (21:10). Additionally, the requirement to dual equip affected units, which also increases costs, still exists. Furthermore, although afloat prepositioning is more mobile than shore-side storage sites, it still represents large concentrations of valuable, yet vulnerable equipment.

The third, and perhaps most heralded, program is the Fast Sealift Ships (FSS). Eight vessels, each commonly referred to as T-AKRs, are the fastest cargo ships on the seas. They are also the most expensive to operate. The ships load fast, unload faster, and can steam at top speed of 33 knots, twice the speed of more conventional cargo carriers. The T-AKRs are actually converted SeaLand SL-7s, initially built in the 1970s by Dutch and German shipbuilders for the New Jersey-based SeaLand Corporation at a cost of more than \$53.4 million each (118:46). The SL-7s were containerships built to accept 40-foot metal boxes loaded and unloaded by shore facilities. Conversions to the SL-7s included the incorporation of roll on/roll off (RO/RO) configuration between the deckhouses. RO/RO means wheeled

and tracked vehicles can be driven on and off without special shore equipment. T-AKRs are 946 feet long with a beam of 105 feet (118:47). Loaded, they displace 55,360 tons of water. They are powered by General Electric steam turbine engines, have two boilers and two shafts each, and develop 120,000 shaft horsepower (118:47). The converted ships have six RO/RO decks with connecting ramps and side-ports for unloading. Hagglund cranes with 35- and 50-ton capacities were added to make the ships self-sufficient for general cargo handling (118:47). These ships were normally in a reduced operating status capable of full activation within four days (32:30). Reduced operating status means the ships are manned by a skeleton civilian crew and master. Prior to Desert Shield/Desert Storm, they were used with great success on many Joint Readiness Exercises. A SeaLand vice president once remarked, "This class of versatile, modern containership will be without equal on the oceans of the world and will insure the competitive superiority of our hardware for the future" (173:37). Desert Storm attests to the worthiness of the FSS program. Together, the eight ships provided 1.48 million square feet of parking space and 143,360 tons of lift--easily enough to move an armored division (118:50). The eight SL-7 ships, indeed, represent a tremendous increase in capability; however, a limited increase all the same. After all, only eight such ships exist with little likelihood of additional FSS acquisitions. The primary intent to all three programs was to reduce the

early burden on airlift flow in an effort to free airframes for unit equipment and personnel missions.

Marine Corps Prepositioning Program in Norway. A storage agreement between representatives of the U.S. and Norwegian governments was signed in October 1982, just 21 months after a memorandum of agreement between the two countries was put into effect

(250:1). Mission essential heavyweight, high volume "supplies, and selected ground combat and aviation support equipment" are prepositioned in the central coastal area of



FIGURE 21: USMC Seal

Norway to support a "cold weather air/ground task force of about 13,200 Marines and 155 aircraft" (250:1). Marines are to fly from the CONUS to Norway with their sophisticated, air-transportable, high-cost equipment prior to hostilities (250:1). Upon arrival in Norway, the Marines will receive their prepositioned assets and a portion of their supplies and ammunition for subsequent redeployment. Once in theater, they will receive the balance of their supplies and ammunition (250:2).

Prepositioned equipment is stored in granite mountain caves that have both controlled and uncontrolled humidity systems. Caves fitted with blast-proof doors provide additional levels of security over other facilities without using arable land (250:13). "Under the agreements, the

Norwegian government is responsible for the security and maintenance of prepositioned materials" (250:2).

United States Air Force Prepositioning. The USAF European prepositioning program consists of two parts: storing War Reserve Materiel (WRM) and NATO Prepositioned Procurement Packages (PPP) (71:1). The two sets complement one another. The equipment is stored in 13 NATO countries for the defense of NATO. WRM assets fill the supply and equipment gaps of the CONUS units until supplies arrive from the US. PPP duplicates CONUS-based aircraft support equipment thereby reducing the volume of equipment requiring movement to the theater in time of crisis. The PPP program is expected to save a minimum of 700 C-141 sorties (71:1). Compared to the Army's POMCUS program, the USAF WRM and PPP prepositioning programs are much smaller in scale. Chapter VIII discusses both USAF prepositioning programs in detail.

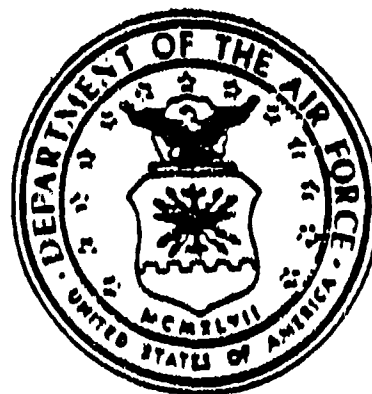


FIGURE 22: USAF Seal

Summary

Airlift has become a vital and highly effective instrument of US national policy. It is a necessary component of America's power projection capabilities, not only for America's defense requirements, but for America's position of world leadership as well. Although airlift is

the most expensive form of strategic mobility, it is the only form capable of delivering forces quickly and deep inland. Airlift can also deliver forces under circumstances unsuitable for the other forms of strategic mobility (i.e., land and sea lines of communication are unavailable, inadequate, or denied). However, airlift resources are limited and will remain so for the foreseeable future.

Sealift is essential in executing any plan larger than a modest "show of force" option. However, unless the continuing decline of America's maritime capability is reversed, the US may not possess the ability to conduct timely, unilateral responses to regional threats. Sufficient US ships and crews are becoming less available due to an inability to compete in world trade routes. Little reason exists to conclude the problem of antiquated sealift resources can abate itself in the coming years. However, on the positive side, the acquisition and modification of the SL-7 containerships in the 1980s was particularly promising. The added capability, obtained at very low cost (only \$113 million per copy), resulted from seeing and seizing an unexpected opportunity. The role the SL-7 played in Desert Shield/Desert Storm was impressive. Never has the US moved such a large military force so far so fast as in preparation for Operation Desert Storm. General Johnson, commander-in-chief of the US Transportation Command, pointing out a serious flaw, described it like this: "The deployment of more than 500,000 US troops and

their war equipment halfway around the world was accomplished in spite of an antiquated and inadequate US shipping fleet" (172). The US government owns only eight fast cargo ships designed to carry heavy military equipment such as tanks. In addition, the government owns a fleet of about 96 Ready Reserve Force ships that range from old to antique. Many of the civilian mariners onboard these ships are in their 60s and 70s. Some crewmen are in their 80s. General Johnson had this to say about the Ready Reserve Force fleet: "The Ready Reserve proved far from "ready" when it was needed for the war with Iraq. It took much longer than planned to find crews for the ships and get them ready to sail" (172). "And even when they were ready," he continued, "many of them weren't the kind of ships the military needs" (172). Too many of the Ready Reserve Force ships are "break bulk" carriers designed to be loaded by cranes that lift cargo from the dock to the ship's holds. Preferred, by and far, are the RO/RO ships designed to allow heavy tanks, artillery pieces, personnel carriers, and trucks to be driven up ramps and onto the ship. Lest Americans forget, much of the successful utilization of "antiquated maritime forces" in Desert Shield/Desert Storm was not simply American perseverance. Much of the success was due to a pre-existing Saudi Arabian infrastructure, the absence of enemy naval forces, and the five and one-half months opportunity for significant military build-up.

Because of its sheer magnitude, the Desert Shield logistics operation has been compared to the legendary Red Ball Express of WWII. The Red Ball Express was the first, longest, and largest of several supply trains set up by Allied forces in northern France, Belgium, and Holland. During the first 11 of its 81 days of existence, the Red Ball Express fleet moved 89,000 tons of supplies--about 8,000 tons a day (175:22). On a typical day in Saudi Arabia, troops moved more than 30,000 tons of ammunition, food, and fuel. To help put the Desert Shield logistics effort into perspective, consider the following (175:22):

- * The deployment for the Korean War reached a highpoint when the US moved 45,000 soldiers in six months--the same task was accomplished in the first month of Desert Shield.
- * In 1965, almost 86,000 troops and 39,000 tons of equipment were airlifted into Vietnam--the same was accomplished in the first six weeks of Desert Shield.

Prepositioning bridges the gap between reinforcement concepts and forward deployment policy in the US defense strategy. Response time is significantly enhanced through the prepositioning of critical wartime assets. Land-based prepositioning sites are the most prevalent, but maritime prepositioning is used if basing rights are politically difficult to obtain or where multiple contingency locations are identified. As an element of the strategic mobility triad, the sheer presence of prepositioned masses of US equipment, in and of itself, may serve to deter aggression from any potential enemy. It reduces the initial strategic lift requirements of oversized and outsized assets while

providing the necessary avenue of quick response to unplanned contingencies. Although airlift is fast and flexible, it is also expensive and weight-limited. Sealift, on the other hand, is a relatively inexpensive means of transporting large tonnage but it is slow and largely limited to major seaports (258:6-7). Despite the added expense of duplicate equipment and its maintenance, prepositioning offers savings in both personnel and operational expenses when compared to forward deployment or the purchase of additional strategic aircraft. Therefore, it must be kept in mind as a reasonable alternative to logistics air and/or sealift.

References Cited in Chapter Seven

(Numbers refer to Citations and Master Bibliography Listing)

1. "Aerospace World," Air Force Magazine, 74: 29-35 (May 1991).
2. Agnew, Donald H. and William A. Kinney. "American Wings Soar Around the World," National Geographic, 84: 57-78 (July 1943).
3. "Air Transport Command in the War Against Japan, The," The United States Strategic Bombing Survey No. 68. Washington DC: Military Analysis Division, December 1946.
13. Bandow, Doug. "Merchant Marine Sinks Oceans of Money," The Wall Street Journal: 20 (September 12, 1988).
14. Barciak, Francis J. Jr., Major, USA. Assistant Professor of Logistics Management. Personal interviews conducted by Captain David Clark. AFIT School of Systems and Logistics, Wright-Patterson AFB OH, 4 August through 5 May 1989.
15. Barnaby, Richard J., Lieutenant Colonel, USA, et al. Mobilization Studies Report Prepositioning of Material Configured to Unit Sets: Measurements of Readiness. Research Report, The Industrial College of the Armed Forces National Defense University, Ft. McNair: Washington DC, 5 July 1985.
16. Becker, James W. European Civil Air: Can NATO Count On It? Washington DC: Government Printing Office, 1989.
21. Boyce, Stephen D., Lieutenant Colonel, USAF. "Strategic Mobility and the Decline of the United States Merchant Marine." A defense analytical study, Air War College (AU), Maxwell AFB AL, 1989.
23. Bramley, Eric. "Ton-a-Minute Being Flown on ATC India-China Run," American Aviation: 20-23 (May 15, 1945).
27. Burshnick, Anthony J., Colonel, USAF, and Markwell A. Fletcher, Lieutenant Colonel, USAF. History of Strategic Airlift. A research report, Air War College (AU), Maxwell AFB AL, 1976.
32. Butcher, Paul D. "Military Sealift Command," Defense Transportation Journal: 30 (February 1989).

34. Carlisle, A. H. Trost. "SOS for the Merchant Marine," Defense 89: 15 (March/April 1989).
37. Cave, Hugh B. Wings Across the World: The Story of the Air Transport Command. New York: Dodd, Mead and Company, 1945.
44. Cleveland, Reginald M. Air Transport at War. New York: Harper and Brothers Publishers, 1946.
45. Clinton, Berry. "The Civil Reserve Air Fleet: National Airlift Asset," The Air Force Magazine, 63: 54-59 (February 1980).
48. Craven, Wesley Frank, and James Lea Cate, editors. "Plans and Early Operations," The Army Air Forces in World War II, vol 1. Chicago: The University of Chicago Press, 1948.
50. Craven, Wesley Frank, and James Lea Cate, editors. "Men and Planes," The Army Air Forces in World War II, vol 6. Chicago: The University of Chicago Press, 1955.
51. Craven, Wesley Frank, and James Lea Cate, editors. "Services Around the World," The Army Air Forces in World War II, vol 7. Chicago: The University of Chicago Press, 1958.
54. DeHaven, Oren E., Lieutenant General, USA. Director for Logistics (J-4). Address to the Military Airlift Committee of National Defense Transportation Association. Charleston AFB SC, 5 May 1982.
55. Denton, Jeremiah A., Chairman, U.S. Senator. First Report of the Commission on Merchant Marine and Defense: Conclusions. Washington DC: Government Printing Office, 30 September 1987.
56. Department of Commerce, Maritime Administration. Vessel Inventory Report. June 30, 1980.
60. Department of Defense. Dictionary of Military and Associated Terms. JCS Publication 1. Washington DC: Joint Chiefs of Staff, Government Printing Office, April 1984.
63. Department of Defense. Single Manager Assignment for Ocean Transportation. DOD Directive 5160.10. Washington DC: Government Printing Office, 9 July 1970.

70. Department of the Air Force. Compendium of Authenticated Systems and Logistics Terms, Definitions and Acronyms. Air Force Institute of Technology, 1981.
71. Department of the Air Force. Followup Audit--Selected Prepositioned War Reserve Material Assets in USAFE. USAF Audit Agency, Project 7085519. Norton AFB CA, 4 August 1987.
80. Department of the Army. Operations. FM 100-5. Washington DC: Government Printing Office, May 1986.
81. Department of the Army. Prepositioning of Material Configured to Unit Sets. US Army Audit Agency, Report: EU 87-209. Mannheim Germany, 29 April 1987.
82. Deputy Secretary of Defense, The. Memorandum for Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, Assistant Secretary of Defense (MRA&L). Washington DC, 1981.
86. Dmitri, Ivan. Flight to Everywhere. New York: McGraw-Hill Book Company, Inc., 1944.
97. "Force Projection," Air Force Issues: US Government, Spring, 1987.
98. Franklin, Carl E., Colonel, USAF. The Efficacy of Prepositioning. Research Report, The Industrial College of the Armed Forces National Defense University, Ft. McNair: Washington DC, March 1985.
105. George, Harold L., Lieutenant General, USA. Commanding General of the Air Transport Command. "The ATC, Here to Stay," Army and Navy Journal, 83: 653, 682 (January 19, 1946).
106. Glines, Carroll V., Jr., Lieutenant Colonel, USAF (ret). The Compact History of the United States Air Force. New York: Hawthorn Books, Inc., 1963.
107. Goldberg, Alfred, editor. A History of the United States Air Force, 1907-1957. Princeton NJ: D. Van Nostrand Company, Inc., 1957.
118. Guidry, Vernon A., Jr. "Very Fast Ships," Military Logistics Forum, 1: 46-51+ (May 1985).
119. Harless, Larry L., Major, USA. "A POMCUS Primer," Army Logistician, 15: 6-9 (March-April 1983).

120. Harrington, Thomas C., Major, USAF. "The Defense Transportation System: Giving Direction to Change." Unpublished research report, Wright-Patterson AFB OH, December 1981.
123. Heflin, Woodford Agee, editor. United States Air Force Dictionary. Washington DC: Air University Press, 1956.
136. Institute for Foreign Policy Analysis, Inc. "U.S. Strategic Airlift: Requirements and Capabilities," National Security Papers, January 1986.
138. Johnson, Maxwell Orme, Major, USMC. "U.S. Strategic Options in the Persian Gulf," Proceedings: 53-59 (February 1981).
140. Jones, David G., General, USAF. Chairman of the Joint Chiefs of Staff. National Strategic Mobility Conference. Defense Transportation Journal, 36. (August 1980).
146. Kitfield, James. "Delivering the Goods to the Troops," Government Executive: 54 (May 1991).
147. Knight, Clayton. Lifeline in the Sky: The Story of the Military Air Transport Service. New York: William Morrow and Company, 1957.
156. Kyle, Deborah M. and Benjamin F. Schemmer. "New DOD Mobility Study Asks \$18-31 Billion to Beef Up Airlift, Preposition More Forces," Armed Forces Journal International, 118: 30-35 (May 1981).
157. La Farge, Oliver, Lieutenant Colonel, USAF Reserve (retired). The Eagle in the Egg. Boston: Houghton Mifflin Company, 1949.
159. Lane, John J., Major General, USA. "Does DOD Need One Single Manager for Transportation?" Armed Forces Management: 50-52 (15 March 1969).
162. Lesser, Ian O. "The Mobility Triad - Airlift, Sealift and Prepositioning in American Strategy," Journal of the United Services Institute for Defense Studies, (March 1986).
165. Linville, Ray P., Lieutenant Colonel, USAF. "Maritime Prepositioning: A Logistics Readiness and Sustainability Enhancement," Air Force Journal of Logistics, 8: 2-7 (Winter 1984).
169. Masko, David P. "Massive Deployment Compares to WWII Airlift," Skywrighter, 32: 9 (September 28, 1990).

170. Matthews, William. "Gulf Operation Highlights Airlift, Sealift Trouble Spots," Air Force Times, 52: 24 (March 18, 1991).
172. Matthews, William. "US to Halve Forces in Europe as NATO Restructures," Air Force Times, 52: 14 (June 10, 1991).
173. Mayer, A. J. "The Cellular Containership," Defense Transportation Journal: 37 (July/August 1972).
175. Miles, Donna. "Sustaining the Force," Soldiers, 46: 20-23 (May 1991).
176. "Military Airlift Command," Air Force Magazine, 73: 76-80 (May 1990).
177. "Military Airlift Command," Air Force Magazine, 74: 85-88 (May 1991).
178. Military Posture FY88. Washington DC: Government Printing Office, 1987.
179. "Military Sealift Command," Defense Transportation Journal, 38: 21-28 (February 1982).
180. "Military Sealift Command," Sealift: 6-27 (October 1979).
181. Miller, Jay. 3rd Strategic Air Depot Association Newsletter. March 1981.
196. O'Hara, John A., Major, USAF. "Strategic Mobility, We Have a Long Way to Go," Defense Transportation Journal, 37: 29-30 (August, 1981).
198. Peoples, William C., Lieutenant Colonel, USMC. Maritime Prepositioned Force: What It Is; What It Does; How It Works. Naval War College, Newport RI, 20 June 1986.
200. Peppers, Jerome G., Jr. Military Logistics: A History of United States Military Logistics 1935-1985. Huntsville AL: Logistics Education Foundation Publishing, 1988.
212. Reichers, Lou. The Flying Years. New York: Henry Holt and Company, 1956.
224. Segal, David. "What Ever Happened to Rapid Deployment?" Armed Forces Journal: 39-40 (March 1991).

230. Sorenson, David S. "Getting Back to Europe: Strategic Lift Needed Now More Than Ever," Parameters: 64-74 (June 1990).
234. Steed, Robert F., Jr., Captain, USAF. The Evolution of the Department of Defense Transportation System: Current Problems and Trends. MS Thesis, AFIT/LSSR/82S. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1982.
235. Stewart, Richard A., Major, USMC. Maritime Prepositioning Force (MPF) Operations. TACMEMO PZ 0022-1-87, OH 7-6 (June 1987).
244. Trzaskoma, Richard J. Statement of the MAC Deputy Chief of Staff: Plans before the Readiness Subcommittee of the House Armed Service Committee. Washington DC: Government Printing Office, 1988.
245. Tunner, William H. Over the Hump. Washington DC: Government Printing Office, 1985.
246. "USAF in Facts and Figures," Air Force Magazine, 73: 37-52 (May 1990).
248. U.S. Congress, House of Representatives, Committee on Merchant Marine and Fisheries, Subcommittee on Merchant Marine. Hearings on Maritime Authorization and Oversight Part 2. Hearing, 96th Congress, 2nd Session, 1980. Washington DC: Government Printing Office, 1980.
249. U.S. Congress, House of Representatives. The Posture of Military Airlift. Washington DC: Government Printing Office, 1976.
250. U.S. General Accounting Office. Military Readiness Status of the Marine Corps Prepositioning Program in Norway. NSIAD-89-110. Gaithersburg MD: US GAO, March 1989.
255. Wehner, Clement E., Lieutenant Colonel, USAF. "POMCUS: Airlift's Mobility Partner," Airlift, 8: 14-18, (Spring 1986).
257. Weinberger, Casper W. Annual Report to the Congress. Washington DC: Government Printing Office, 1987.
258. Wendzell, Dr Robert L., and Colonel James L. True, Jr. "Selective Involvement and Strategic Mobility Changing Strategy, Changing Emphasis," Air University Review, 37: (May-June 1986).

259. White, Eston T. National Security Management Transportation. Industrial College of the Armed Forces, Washington DC, March 1974.
263. Wood, C. N., Major General, USA. "Alliance and Defense Capabilities in Europe." Testimony before the Subcommittee on Conventional Forces and Alliance Defense of the Committee of Armed Services, 100th Congress, 1st session. Washington DC: Government Printing Office, 1988.
265. "World's Greatest Airline, The," Fortune, 32: 158-213 (1945).
268. Young, Susan H. H. "Gallery of USAF Weapons," The Air Force Magazine, 73: 141-160 (May 1990).

VIII. United States Air Force War Reserve Materiel

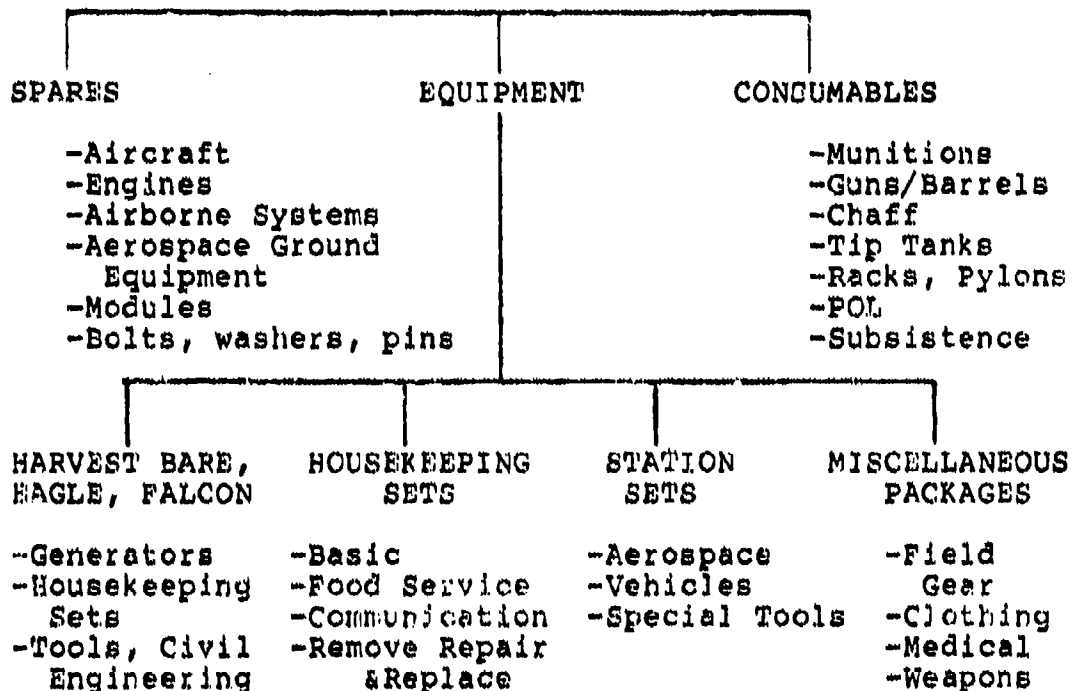
Chapter Overview

The Department of Defense (DOD) objective is to support national policies and to successfully defend the security of the nation. A primary element of military readiness is the sound and careful establishment and management of adequate war reserve materiel (WRM). DOD defines war reserve materiel as "the additional stock, over and above normal peacetime operating stocks, which must be on-hand at the time a conflict begins, to support the higher wartime activity levels until the resupply pipeline can sustain combat rates" (62:280). War reserve materiel is designed to assure sustained logistical support of the most essential supplies during periods of mobilization, contingency situations, or war. This chapter proceeds with a detailed analysis of USAF War Reserve Materiel policy, discusses the historical significance of USAF WRM prepositioning to the US defense policy, and also considers the execution of WRM prepositioning within the USAF as well as WRM's ties to forward deployment and reinforcement strategies. To conclude this chapter, an evaluation of several options concerning the future disposition of USAF WRM prepositioning is presented.

War Reserve Materiel Policy

The office of the Assistant Secretary of Defense, Installations and Logistics, is tasked with providing basic war reserve materiel concepts, policies, and reporting requirements (61:1). Because the DOD considers a sound, carefully established and managed WRM program vital to military readiness, each service component has been tasked to establish and maintain a positive and continuing WRM program. Air Force Regulation 400-24, War Reserve Materiel (WRM) Policy, "establishes [USAF] WRM program management policy and assigns responsibilities for program management actions" (78:1). WRM, as defined in the USAF, is "that materiel required, in addition to mobility equipment and primary operating stock, to support wartime activities reflected in the USAF War and Mobilization Plan (WMP) until the industrial base can meet wartime demands" (78:5). Consumables, spares, repair parts and engines, equipment, individual clothing and equipment, individual weapons and ammunition, subsistence, medical WRM, and the NATO Prepositioning Procurement Package (PPP) are included in WRM. Major WRM categories are illustrated in Figure 23.

WAR RESERVE MATERIEL



Source: (239:23)

FIGURE 23: Major WRM Categories

WRM Spares. WRM spares, repair parts, and engines are "components of aircraft, vehicles, and other equipment which will fail or may be worn beyond acceptable operating limits during wartime activities" (78:5). Examples include spare engines, line replaceable units, modules, other reparable components, and expendable repair parts such as washers, bolts, and pins.

WRM Equipment. WRM equipment is "an end item of materiel used to support wartime activity at [planned operating bases] or enroute locations" (78:5). Examples

include vehicles, aerial port materiel handling equipment, aircraft support equipment, relocatable maintenance, personnel, and feeding shelters for bare base operations, chemical warfare shelter equipment, packing and crating equipment, ground communication equipment, and civil engineering airfield repair equipment. WRM individual clothing and equipment are "field duty uniforms, combat boots, field jackets, deployment bags (general purpose, cold weather, and chemical warfare defense equipment), and associated items essential for individuals subject to deployment for combat" (78:6). WRM individual weapons and ammunition "support additive wartime requirements for familiarization and qualification training of non-prior service trainees and mobilized inactive reservists or retirees" (78:6).

WRM Consumables. WRM consumables are "items of materiel consumed primarily during wartime aircraft missions" (78:5). Examples include munitions, POL, aircraft guns, chaff, flares, auxiliary fuel tanks, racks, adapters, and pylons (TRAP), and subsistence. WRM subsistence is "a food ration procured to support USAF forces in wartime" (78:6). Examples include B-rations, T-rations, meals-ready-to-eat (MREs), meals flight feeding (MFF), and rations cold weather (RCW). Medical WRM includes "the additional supplies and equipment needed to support the forces and missions specified in applicable operations plans" (78:6).

Examples include contingency hospitals, air transportable clinics, aeromedical evacuation kits, and shelter first-aid kits.

Mission. The mission of USAF WRM program is "to identify WRM requirements and ensure serviceable assets are on hand at or near the planned operating base as documented in the USAF WMP, volume IV. The WRM mission:

a. Includes wartime missions of the Department of the Air Force, Air Force components of unified and specified commands, and Air Reserve Forces in federal service.

b. Supports wartime activity at each [planned operating base] identified by individual war plans.

c. Directs "prepositioned WRM" to wartime using commands for storage at the [planned operating base] when possible. Prepositioned WRM supports wartime activity for a period of time called the "prepositioning objective" which is expressed in number of days of support (the prepositioning objective number of days is classified, refer to USAF WMP-1, Annex E, for specific time by commodity/theater). A unit's WRM requirements are based on the most stringent wartime tasking.

d. Provides "prestocked WRM" which is stored in the Air Force Logistics Command (AFLC) and Defense Logistics Agency (DLA) wholesale logistics system. Prestockage objectives cover the period of time beyond the prepositioning objective until expansion of industrial base production can deliver quantity levels that will keep the resupply pipeline filled at combat consumption rates. (78:5)

With the exception of War Readiness Spares Kits (WRSK), prepositioned WRM assets are stored at or near the wartime planned operating base to reduce critical transportation demands and to enhance combat closure times. WRSK for units with wartime deployment missions are stored at home station to maintain greater tasking flexibility. WRM, considered to

be in long-term storage although a peacetime usage of some items transpires, is afforded at least the same quality of storage as similar peacetime assets. All WRM is considered "in storage." Storage precisely correlates to the decision to preposition WRM. Using and storing commands coordinate the storage location of WRM. In overseas areas, WRM storage responsibilities are delegated to a designated Air Force base for each non-Air Force storage location by the storing command (78:13). WRM commodities, except for those exempted (see Figure 25), are identified with a solid, black-colored, equilateral WRM triangle (Figure 24).

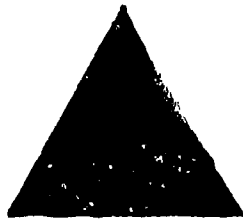


FIGURE 24: Solid, Black, Equilateral WRM Triangle

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- ** Munitions and munitions storage facilities
 - ** Bulk fuel storage facilities
 - ** Bulk deicing fluid storage tanks
 - ** Demineralized water tanks and bladders
 - ** Engines
 - ** Medical equipment (excluding vehicles)
 - ** Nitrogen and oxygen liquid storage tanks/gas cylinders
 - ** Rations
 - ** WRSK/BLSS assets

Source: (78:16)

FIGURE 25. WRM Triangle Requirement Exemptions

War Reserve Materiel History

The last war fought on US soil was, in fact, America's very own Civil War fought in the latter half of the nineteenth century. A cursory look at various, current war plans indicated the US has little intention of fighting another war on US soil. Overwhelmingly, the majority of America's war plans are based on the assumption enemy engagement will be in an overseas theater (i.e., in the Pacific, in Europe, or in the Middle East). Such an assumption requires, as a minimum, a credible deterrent be formulated--the US must have the capability to respond in full force to an overseas location in minimal time in response to a crisis. To support this objective, the DOD operates bases throughout the globe. While this measure provides forward basing in foreign countries, peacetime manning and equipping typically cannot meet wartime operational requirements. Thousands of troops and tons of cargo require deployment to these theaters if America's forces are to fight effectively from such locations. Airlift and sealift, as noted earlier, are two primary methods used to deploy forces. Both are in critical short supply and both are highly vulnerable to attack in time of war. Furthermore, both are time consuming and perhaps not readily available in time of urgent need. When a crisis erupts, victory may depend on those best able to provide the most combat power in the shortest time. The US is surely at

a disadvantage because of a physical separation from most of the world. The Chinese military strategist and theoretician Sun Tzu Wu, in his work entitled The Art of War, put victory into perspective. On elemental tactics, he said, "Whoever is the first in the field and awaits the coming of the enemy will be fresh for the fight; whoever is second in the field and has to hasten to battle will arrive exhausted" (266:58). Concerning victory's complement, Sun Tzu said, "... an army without its baggage train is lost; without its provisions it is lost; without its bases of supply it is lost" (266:65). With respect to lessons learned, Sun Tzu elaborates on preparedness:

The art of war teaches us to rely not on the likelihood of the enemy not coming, but on our own readiness to receive him; not on the chance of his not attacking, but rather on the fact that we have made our position unassailable. (266:70)

With all of this in mind, once the enemy is engaged, how might resupply be accomplished in a timely and effective manner? It takes time for the US industrial base to transition from a peacetime to a wartime production mode. It will also take time, as well as critical lift resources, to transport supplies overseas. Such handicaps need not be "life-threatening." Stockpiling and prepositioning assets, both in the CONUS and overseas as part of the USAF WRM program, provides the initial wartime surge required by US combat forces in theater. WRM assures sufficient supplies

and equipment are available for US forces until wartime resupply is established.

Revolutionary War. Prior to the Revolutionary War, England administered the matter of a concerted defense of colonial North America. In doing so, a standing army of 10,000 men was established--an army to be supported and quartered by the colonies (154:1). This British imposition, accompanied by the increased levies of taxes, soon prompted armed conflict between the colonies and England.

Each colony, with the exception of Pennsylvania, had established its own militia, similar to the British militia in many respects, prior to the outbreak of hostilities. Men between the ages of 16 and 60 were required to serve in the militia. Their primary duty was to stand on call in the event an Indian attack or other emergency threatened the colony. Each man was expected to provide his own weapon, ammunition, food, clothing, and blankets (220:6). For those too poor to provide such things, the local authorities maintained a small reserve of weapons, ammunition, and other goods (79:28-29). This action, perhaps the first documented example of the US military prestocking war reserve materiel, served a vital purpose. For, on 5 September 1774, the First Continental Congress met and addressed grievances against England (79:42). In response to the British attack at Concord on 19 April 1775, the Second Continental Congress met on 15 June 1775 to authorize the establishment of an

Army (79:42). George Washington was appointed Commander-in-Chief. By the Fall of 1776, a series of defeats made disaster for the Americans appear imminent. Washington, leading less than 3,000 poorly equipped men on a retreat through New Jersey, was pursued by a British force of 7,000 well-equipped and spirited soldiers. For one reason or another, the British pursuit relented. Washington was provided the breathing room necessary to make an ingenious and now famous decision. After crossing the Delaware River in retreat, Washington ordered all but a few boats to be destroyed. Those left intact were hidden for a later return crossing. Washington was apparently surprised; the British, upon reaching the Delaware, were unable to cross for lack of boats. Using war reserves to his advantage, while the British had failed to anticipate logistical needs, allowed Washington to stall the British pursuit, re-cross the Delaware in the boats he had prepositioned, and recapture most of New Jersey (220:16).

The period between the Revolutionary War and the War of 1812 was marked by numerous threats for which the military was not prepared. For example, with the Revolutionary War concluded, America saw little need for a large standing Army. In 1783, Washington expressed the view that it was "dangerous to the liberties of a country and that the nation was too poor to maintain a standing Army adequate to our defense" (79:102). As a result, the regular Army was

reduced by the Continental Congress on 2 June 1784 to 80 enlisted men and a few officers. Their responsibility rested primarily with the guarding of left-over supplies stored at Fort Pitt and West Point (220:22). Other threats included Indian attacks on the Frontier, Spanish uprisings in the South, and the French and English apprehension of American shipping vessels.

War of 1812. Because of impressment of American sailors into the British Navy, seizure and search of American vessels, and British interference in the Indian wars, war with England seemed inevitable in 1811 (220:23). In that year, a significant problem confronted Congress with regard to a declaration of war against England. According to historian Reginald Horsman, "the great delay in declaring war in this session of 1811-1812 was primarily because of the lack of means with which to fight" (127:18). It was not until 18 June 1812 that Congress complied with President James Madison's request for a declaration of war against England (127:24).

Military strength at the outbreak of the War of 1812 consisted of approximately 12,000 troops. New recruits accounted for as many as 5,000 of that number (220:23). The Navy consisted of three 44-gun frigates, three 38-gun frigates, and 14 smaller ships (79:124). Legislation was enacted which increased the size of the armed forces, already garrisoned in forts scattered along the western

frontier, and funds were allocated to supply them. War reserves were inadequate. Because legislation to support America's small Army was, for the most part, accomplished either just before the declaration of war or on the day of declaration, other logistical problems surfaced (154:43-45).

First among many problems was America's reliance on imported arms. Just prior to this period, increased tensions caused Congress to examine armament stockpiling. Recognizing American dependence on imports for arms, Jefferson wrote, "Experience has taught me manufacturers are now as necessary to our independence as to our comfort" (135:93). With this recognition, Congress authorized the establishment of National Armories--a step in the right direction. Another significant problem dealt with the inconsistencies in acquisition and procurement responsibilities. Obligations to have on hand enough rations to feed the troops "at all times, providing subsistence for at least six months in advance at the most distant posts" (79:107), existed. The problem was not necessarily the acquisition of military clothing, camp utensils, military stores, medicines, hospital stores, and other such goods. Instead, the problems most frequently encountered dealt with the proximity of such goods to those in need of them. On practically all fronts of the War, commanders had to resort to local purchases of necessary supplies--particularly rations (79:139).

Civil War. In 1860, heated arguments between Northern and Southern interests were not expected to escalate into armed conflict. The size of the standing Army was slightly more than 16,000 troops--an Army oriented almost entirely toward cavalry operations and frontier protection (132:25). The outbreak of the Civil War, coupled with the magnitude of that conflict, surged the military to a force of over one million troops. When the hostilities began, initial logistics preparations displayed the traditional, characteristic American unpreparedness for war. The situation was so chaotic it was characterized as "one of the sorriest examples of mobilization ever to occur in this country" (154:123). President Lincoln observed that "one of the greatest perplexities of the government is to avoid receiving troops faster than it can provide for them" (135:161). Part of the problem was that no such thing as systematic war planning existed within the War Department prior to the Civil War (135:171). Therefore, no logistics planning existed either. Nor did adequate, prepositioned war reserve materiel exist.

The inability of the War Department to effectively equip, clothe, or feed military forces with its own limited resources dictated the delegation of those tasks to the states. Reimbursement by the federal government would follow (154:122). The variety of support provided by the states was astounding. Some states were wealthy; their

soldiers were treated well. Some soldiers were not so fortunate. Uniforms, assuming availability, were not standardized. Food stuffs were normally centered around agrarian areas of the country; however, food was generally available from one source or another. The same was not true for other necessities. The War Department had no reserve supplies of shoes, blankets, clothing, mess equipment, or firearms (154:124).

Demobilization after the Civil War was geared to retaining sufficient administrative resources for Southern reconstruction efforts. Army emphasis quickly returned to the frontier mentality. Troop strength dropped to 25,000--larger than its pre-Civil War strength but small in terms of the country and its population. America's military was purely a defensive force--a force at the mercy of continued Congressional budget cuts. Unsurprisingly, the westward movement of settlers and a transcontinental railway ensured military forces were kept busy. That is, until America went to war with Spain.

Spanish-American War. Historically, public opinion is always on the side of those seeking the freedoms guaranteed by the Creator. Oppression and misrule by crazed dictators find little sympathy in the eyes of Americans. Although government representatives typically seek "happy medians" and compromising positions, limitations to their willingness to "turn their cheeks" can be found. Such was the case with

the Spanish-American War. Amid public outcries in support of Cuban revolutionaries (155:92), McKinley's administration was not swayed to action until the sinking of the battleship Maine in Havana Harbor. On 21 April 1898, war was declared (220:48).

As tended to be the case, America was not militarily prepared. Planning was inadequate. Few stockpiles existed because of the confidence diplomacy would settle the issue (242:161). Pre-war funds were appropriated to the services, but the money could not be spent for "offensive purposes" (5:8). With the declaration of war, America found itself slow to engage--nearly 45 days of valuable lead time were effectively wasted by inactivity (220:48). The Army attributed its belated activity to ten separate Bureaus of the War Department, each with its own mountain of paperwork and slow decisions. No general staff existed and the Bureaus tended toward parochial and uncoordinated actions (242:147). In spite of these and other shortcomings, a formidable fighting force was finally assembled and loaded on ships for Cuba.

Upon arrival, troops took only personal equipment and some food ashore. Once ashore, resupply became the main problem--armed resistance was negligible. As the troops moved away from the shore, wagon support, although desirable, was lacking due to unavailability. Had wagons been readily available, the poor condition of Cuba's

infrastructure could have easily negated their utility. This lack of transport capability, coupled with shortages throughout the combat support arena, could have resulted in "a far different outcome had Spanish resistance been more determined" (220:49).

World War I. It can be said World War I broke out on August 1, 1914. On that same date, most European powers ordered the total mobilization of all the resources of their societies. Pre-war thinkers had believed that twentieth-century war would be short and decisive--how could mass, mechanized warfare possibly be anything else, they reasoned. It was widely believed the war would be over by Christmas; nobody, it seemed, made any plans concerning further action if it were not over. But the war was not ended by Christmas. In fact, the war would soon become a prolonged struggle lasting for years. Food, as was the case in earlier conflicts and wars, was usually available in some form or another. Such was not the case with ammunition, fuel, and various other items of supply. In the words of Martin Van Creveld (251:233-234),

The products of the machine--bullets, shells, fuel, sophisticated engineering materials--had finally superseded those of the field as the main items consumed by armies, with the result that warfare, this time shackled by immense networks of tangled umbilical cords, froze and turned into a process of mutual slaughter on a scale so vast as to stagger the imagination.

The "tyranny of logistics" was never so strongly felt as on the fields of WWI. Warfare "had progressed from sieges to

maneuver back to sieges, with logistics systems unable to support an army on the move, but only one standing still" (220:63). Ammunition, for example, accounted for less than one percent of all supplies during the Civil War (251:233). In the first months of WWI, the proportion of ammunition to other supplies was reversed (251:233). WWI ammunition was often unloaded in quantities greater than those needed, and would then be left lying in the open field (251:127).

As in the past, Americans were watching the war in Europe and publicly taking a neutral stand. Surprisingly, however, the War Department, during 1915-1916, began to anticipate the possibility of US entry into the war. "What if" analyses were conducted at the urging of the Army War College (220:63). Ammunition and medical supplies were known shortages---deficiencies were immediately purchased from available stocks on the American market and manufacturers were urged to increase production. War reserves, probably for the first time in US history, were being consciously considered. In 1917, there was reason to appreciate such foresight as the US, too, declared war in April of that year. A little more than one year later, 11 November 1918, the guns all along the Western Front, as well as throughout all of Europe, were silenced when armistice was signed (129:112). The first thought of Americans on both sides of the Atlantic was to "get the boys home by Christmas." The gigantic industrial and military

machine of the United States, only beginning to run in high gear, suddenly had to be thrown into reverse (135:388). Only twenty years after fighting the greatest war in their history, the nations of Europe would soon find themselves (and eventually their allies) involved in another large-scale conflict.

World War II. In the years between the two world wars, many turned their attention to solving a complex problem: how wars in the future could be fought more skillfully, less wastefully and, above all, more decisively. Mobility of forces, and their reserve materiel, seemed to be the answer.

During World War II, tactical air units were located as close as possible to the ground forces they supported. This required the tactical air units to be mobile, able to quickly pack up and move as the ground forces advanced or retreated. Mobility was achieved by transporting personnel and equipment by surface means such as ships, vehicle convoys, or trains. This concept of mobility support proved to be both inefficient and expensive. Not unlike earlier wars, the most critical shortfall, however, was the relatively long time taken for a relocated support base to become operational (240:7). As effectively illustrated, logistics planners throughout the war had to operate without strategic plans sufficiently explicit and approved far enough in advance to provide a firm basis for the strategic placement of critical reserves or for industrial production

programs. Production lead time, for example, for major items was between 18 and 24 months. America's production effort was geared, it seems, to a determination to out-produce the enemy. Economic mobilization was based not on strategic plans, but on building up an arsenal of material to equip divisions and squadrons which then would be available to implement future strategic plans (135:424). This was the thinking behind President Roosevelt's 1940 call to make America an "arsenal of democracy," providing assistance to the Allies under the Lend-Lease program. Recognizing US entry into the war after Japan's attack at Pearl Harbor was an asset to the Allied effort, a decisive, simultaneous victory over all three enemies (Germany, Italy, and Japan) was regarded as impossible. The question of logistical limitations served as a catalyst for the first and fundamental strategic decision for waging global war--the main effort should be aimed first at defeating the Axis powers (Germany and Italy) in Europe while fighting a holding campaign against Japan in the Pacific (135:426). As with any war or conflict, the ultimate aim of logistics is to get the proper combat elements to the right place at the right time, properly equipped to fight, and with the means at hand to maintain them in the accomplishment of their missions. In the early days of US involvement in WWII, Reverse-Lend-Lease saved the day. Reverse-Lend-Lease was essential to America's troop support in foreign lands during

the war. Through Reverse-Lend-Lease, the US was afforded war reserves, so to speak, in the form of bases, food, clothing, services, facilities, and equipment--in essence, a shortage of otherwise critical materiel was overcome.

Korean War. When war broke out in Korea in 1950, the North Koreans had a distinct logistics advantage over the Republic of South Korea. North Korea was industrialized while South Korea was agrarian. Furthermore, much of the little military equipment South Korea owned was quickly seized during the initial North Korean invasion. Because the US had no logistics structure in place in the Pacific, America was faced with supplying war materiel while simultaneously preparing forces for intervention. America's neglect in establishing a logistics structure throughout the Pacific was attributable to a lack of planning. "Neither the Far East Command nor the Department of the Army appeared to have any prepared plan for support of military operations in Korea" (135:649). This included the strategic placement of critical war reserve materiel. For the most part, Korean logistics paralleled World War II logistics. In fact, much of the equipment used during the first months of the Korean War was comprised of abandoned World War II surplus collected from the islands of the South Pacific. It has been rightly asserted that "there could have been no Korean War without a WWII preceding it. Stocks being maintained in the various materiel reserves were made up almost entirely

of WWII supplies, for there had been virtually no new procurement of most items since the end of WWII" (135:649). Something had to be done to ensure future military mobilizations could be prepared to rapidly deploy at a moment's notice to any conflict on the globe. It was not until the advent of a nuclear air force and the United States' ever increasing role in world affairs in the early 1950s that the USAF was caused to reevaluate its mobility support concept.

Post-Korea. In 1953, the Tactical Air Command (TAC) was charged with the creation of a mobile support team to be part of the Composite Air Strike Force (CASF)--a worldwide deployable, nuclear response force using tactical fighters (122:2). The USAF's first mobility support kit was described as mostly WWII vintage "tents, field kitchens, medical facilities, power generators, cots, desks, and other equipment" (262:24). The kit offered little improvement in mobility since it relied on the same bulky, heavy, and, by then, outdated equipment used during WWII (262:24).

President Kennedy's concepts of "flexible response" and "strategic mobility," coupled with the Cuban Missile Crisis, served as the catalyst behind the next development of the USAF's concept of mobility support (122:1;215:18). In 1962, the TAC Gray Eagle Detachment, responsible for acquiring and maintaining a mobility support package consisting of four sets, each capable of supporting 1,100 personnel, was formed

at Warner Robins Air Logistics Center (ALC) Georgia. Each of the four sets could then be broken into 825-, 550-, or 275-man support kits. The Gray Eagle kits were developed due to the impossibility of maintaining permanent facilities and in-place equipment at every potential operation site in the world. The Gray Eagle kit would provide a means of establishing a contingency air base anywhere in the world. The kit's ability to be broken into smaller support kits served nicely to support President Kennedy's "flexible response" doctrine (262:24). Among the contents of the Gray Eagle kit were four 1,100 personnel sets, an Arctic Augmentation Element, backup stock, and spare parts.

Although the kit was more mobile than previous mobility support equipment, its main drawback was its size and weight. Each 1,100 personnel set weighed more than 750 tons. The package, although air transportable by C-130 aircraft, would have required 75 sorties to transport a single 1,100 personnel set; 300 sorties for an entire Gray Eagle package. The large air transport requirement effectively reduced the benefit of the package's air transportability (215:18). In response, the Gray Eagle kits were soon established in United States Air Forces, Europe (USAFE), and at two other sites: Wheelus AB, Libya, and Clark AB, Philippines, an element of the Pacific Air Forces (PACAF) (68:8). The PACAF Gray Eagle package was used extensively in Vietnam.

Vietnam War. The USAF and other services began arriving in Vietnam in an "advisory" function long before events in the Tonkin Gulf escalated the war to include full-scale US intervention. Logistically speaking, the US had been acquiring needed materiel in a piecemeal fashion since 1960. In 1961, the US assigned about 5,000 personnel to Southeast Asia as "advisors." Soon thereafter, the operational situation grew into a "30-day TDY" stage, during which time no base-level supply or maintenance function existed. Maintenance was performed using mobility WRSK designed to sustain two flying hours per day per aircraft, for a period not to exceed 30 days (22:17). The 30-day TDY concept was soon stretched to 180 days; however, operations were still subject to the same temporary and limited mobility support (22:17). It was not long before units assigned to Vietnam and other Southeast Asia (SEA) locations began flying two to three times their normal flying hour programs under very difficult conditions. The requirements on the Air Force Logistics Command for supplies were rapidly increasing. In 1965, AFLC instituted Project Bitterwine to help support the 19 permanent, self-sufficient bases in SEA (22:17). Gray Eagle packages were the answer. The PACAF Gray Eagle packages were shipped, not air transported, to Vietnam and provided facilities and equipment during the build-up of bases at Cam Rahn Bay and Phan Rang (254:9). In fact, the success of the Gray Eagle assets led to the

acquisition of numerous Gray Eagle sets throughout SEA (262:24). During 1967, AFLC conducted a review of the Gray Eagle packages to draw upon the recent experiences of the Vietnam War and to update equipment contents. The resulting packages were named Loggy Gray, Pacer Gray and, finally, Harvest Eagle (254:9). New and improved packages, referred to as Harvest Bare and Harvest Falcon, were later organized. A careful integration of the three "Harvest" programs in the late 1980s comprised the basis for a twenty-first century bare base package, appropriately referred to as Bare Base 2000.

Desert Shield/Desert Storm. To a great extent, "the relative ease and speed with which US forces were bedded down in the Persian Gulf was a direct result of initiatives taken by the WRM community's foresight..." (65). However, some things were overlooked. In general, there was concern over the loss of visibility for WRM resources supporting Persian Gulf activities. Most MAJCOMs, for example, expressed concern over the manner in which "ad hoc" deployment taskings were executed. Instead of executing an "off-the-shelf" plan for such a contingency, units were tasked in a piecemeal fashion. Because a specific operations plan was not tasked in its entirety, units were forced to deviate from standard operating procedure, develop nonstandard unit type codes (UTCs) and, subsequently, deploy their forces. Unit type codes are "six-character

alphanumeric designators that identify a specific capability or force required to support specific contingency plans" (74:Al-1-1-11). For example, a standard UTC could be developed to support 12 fighter aircraft--portions of that UTC may include aircraft, support equipment, spares (WRSK), communication gear, personnel, and so on. However, an adhoc tasking may require the unit to deploy only four fighter aircraft. If that is the case, units are authorized to tailor the standard UTC to correspond more closely to the adhoc tasking. For simplicity, only one third of the original tasking would be deployed in this case--four fighter aircraft versus the twelve fighter aircraft in the original UTC. The substitution of nonstandard UTCs in Desert Shield/Desert Storm, which were tailored at the time of deployment, resulted in an unnecessary requirement at the onset of the deployment to build nonstandard UTCs. Delays associated with this practice created an increased demand for WRM resources in theater until the equipment left behind could be inserted into the airlift flow. Precise tracking of each WRM asset proved difficult. Additional concerns were voiced over the eventual reconstitution of those WRM resources, abuses and misunderstandings of the requisitioning prioritization process which complicated the movement of some resupply items, and retrograde movement to depot repair facilities.

Prepositioned ships, on the other hand, were an indispensable advantage as were the resources prepositioned within the boundaries of countries in the region. Most units found the WRM resources were in serviceable condition and operated satisfactorily. Emphasis should continue to be placed on expanding those initiatives where politically and economically feasible.

WRM in the 1990s. During the 1990 Worldwide WRM Conference, held 14-16 November 1990 at Scott AFB IL, Lieutenant Colonel Gaiter, HQ USAFE/LGX, provided a briefing on USAFE's most recent effort to provide enhanced WRM asset management. USAFE's answer--Regional Logistics Support Centers (RELOG). The USAFE concept provides prepositioned regional support centers which support collocated operating bases throughout central Europe. The regional centers will be manned by WRM-funded positions. PACAF has a similar program under development to manage its COB assets in Korea. Previously, the maintenance of WRM assets was the responsibility of host bases, many of which will be closed as a result of drawdowns throughout the USAFE area of responsibility. This effort, in addition to the increased support for WRM assets, will ensure a sound USAFE program even though WRM program dollars are being absorbed by other operationally driven demands for limited Operations and Maintenance (O&M) funds. The overall distribution for FY91 WRM funding is summarized in Table 13.

TABLE 13
FY91 WRM Funding

FUNDING:	<u>USAFE</u>	<u>PACAF</u>	<u>TAC</u>	<u>AFLC</u>
President's Budget	22.1M	4.61M	59.45M	0.54M
Financial Plan	22.36M	3.33M	50.8M	0.34M
Distribution	19.69M	2.62M	47.86M	0.48M

Source: (65)

Most of the cuts were a result of across-the-board programmatic rollbacks. The bottom line is that the trend is decidedly downward with no general reduction in WRM inventories.

War Reserve Materiel Execution

The Deputy Chief of Staff, Logistics (HQ USAF/LG), manages the USAF WRM program (78:20). Primary responsibilities include, but are not limited to,

overseeing the program, leading the collective efforts of the staff functional agencies, publishing Air Force WRM policy, and achieving Air Force objectives for the planning, programming, budgeting, acquisition, distribution, storage, and maintenance of Air Force WRM commodities. (78:20)

Authorized WRM "applies only to materiel obtained, distributed, or stored and designated as WRM before wartime" (78:6). To qualify as WRM an item must meet one or more of the criteria listed below. Examples which do not meet WRM selection criteria include strategic missile support items, CRAF POL, items needed for post nuclear attack, nonessential medical items, and "purchases or grants for foreign

countries and international organizations specifically included in certain foreign military sales cases, military assistance programs, or grant aid" (78:7). It should be noted, however, meeting one or more of the criteria does not imply automatic authorization as a WRM asset. Examples of Air Force commodities which have met WRM selection criteria include air-to-air and air-to-surface munitions, chaff, ground communications-electronics-meteorological equipment, vehicles, aerial port equipment, POL, subsistence (MREs), individual clothing, individual weapons, Harvest Bare, Harvest Eagle, and Harvest Falcon assets designed to support personnel, maintenance, and supply in a bare base environment (78:7). WRM selection criteria follow:

- a. Essential for wartime use by combat forces.
- b. Essential for wartime use by combat support forces and the expanded logistics, medical, and training systems.
- c. Essential to maintaining the effective operation of equipment or weapon systems.
- d. Essential for prepositioning to reduce strategic lift.
- e. Essential for rapid mobilization and deployment of forces.
- f. Essential for prepositioning in centralized pools when unit tasking is not specified until time of execution.
- g. Essential for the feeding, protection, and survival of forces.
- h. Essential for augmenting forces immediately upon arrival or when a unit's peacetime allowance does not provide necessary equipment to accompany it on deployment. (78:6)

The primary source documents used by USAF personnel in determining WRM support include the USAF WMP-5, USAF WMP-4 Wartime Aircraft Activity (WAA), Commander-in-Chief Time

Phase Force Deployment Data (TPFDD), Vehicle Authorization List (VAL), War Plans Additive Requirements Report (WPARR), Medical Planning Module, and Wartime Manpower Mobilization Planning System (WARMAPS) (78:7-8). WRM requirements are based on "wartime activity from D-Day (when hostilities begin) until P-Day (when industrial production can sustain combat consumption rates) unless otherwise directed by the Defense Guidance" (78:9). For planning purposes, "that point does not exceed 180 days" (78:64). The total D-Day to P-Day requirements are subject to a balanced allocation among prepositioning objectives and prestocked objectives. WRM stockpiles must be rotated and kept in ready-for-use condition.

WRM Prepositioning. WRM is either prestocked or prepositioned. The wholesale logistics system (HQ AFLC, DLA, and GSA) stores prestocked WRM assets. Prestocked WRM assets "support the force after primary operating stocks and prepositioned assets are used, or until the end of the scenario, or until the production base can meet the wartime need (P-Day), whichever comes first" (78:13). HQ AFLC prestocked WRM assets are centrally procured by AFLC. AFLC manages prestocked WRM assets under the Pacer Flex program, a name "assigned to WRM prestocked in CONUS by AFLC to support the planned non-nuclear activities reflected in the USAF WMP" (78:13).

Prestocked WRM consists of two primary components: Other War Reserve Materiel (OWRM) and Command Overflow. OWRM is "that quantity of Pacer Flex war consumables computed to support sorties identified in the USAF WMP-4 and secondary items (spares, repair parts, and other materiel identified by expendability) needed to support combat flying hours" (78:14). POL and deicing fluid are typical examples. OWRM quantities provide backup for those items authorized for prepositioning by operating commands in the War Consumables Distribution Objective (WCDO) and WRSK/BLSS (Base Level Self-sufficiency Spares). Command Overflow is the "temporary storage of Pacer Flex consumables computed to support sorties identified in the USAF WMP-4 for prepositioning by MAJCOMs, but for which MAJCOMs have no storage or maintenance capability" (78:14). The following alternatives, listed by priority, must be considered before operating commands request Command Overflow authorization (prestockage of WRM assets that should be prepositioned):

- 1) Can the assets be prepositioned at the planned operating base;
- 2) Can the assets be prepositioned elsewhere in the area of responsibility;
- 3) Can the assets be prepositioned with deploying units as unit support kits;
- 4) Can the assets be prepositioned afloat in prepositioning ships?
- 5) If not, the final alternative is to have the assets prestocked at depot (as Command Overflow). (78:14)

The first assets moved as prepositioning becomes available are those WRM assets prestocked at depot (78:14).

The underlying purposes of WRSK, BLSS, and OWRM are similar--ensure units with wartime tasking possess adequate spares support. Major differences among the various kit concepts (WRSK, BLSS, and OWRM) "relate to mobility of the assets in package form, storage location, ownership, relationship with peacetime stocks, range of support, and number of days support" (78:32). A brief discussion of WRSK and BLSS concepts is warranted.

WRSK make-up is matched to the "configuration, tasking, initial deployed maintenance capability, programmed arrival time of planned follow-on supply support concepts for the specific units assigned WRSK" (78:34). WRSK composition must be considered an integral part of the unit deployment package. Generally, WRSK is developed "to support single or multiple squadron deployments to a single beddown location" (78:34). WRSK, normally prepositioned with the using unit, may include spares and repair parts for aircraft, vehicles, communication systems, and other equipment, as appropriate. WRSK is authorized for those "CONUS-based units designated as available for world-wide deployment in the WMP-3 as integral combat units" (78:35). WRSK is also authorized for commands at "peacetime stations outside of CONUS if a unit is designated to deploy and operate away from home station in support of a JCS-approved Operations Plan (OPlan)" (78:35). WRSK authorizations for combat support forces (those organizational elements whose primary missions are to

provide support to the combat forces and which are a part of, or prepared to become a part of, a theater, command, or task force formed for combat operations (60:75)) are based on units identified in the WMP-3 which are available to deploy by D+10 days. During a general war, WRSK is not resupplied. Instead, WRSK is integrated with and used as primary operating stock. In general, each WRSK item must be reviewed at least annually "to ensure compliance with set item selection and computation policies, and to ensure continual update of item configurations and usage factors" (78:36).

BLSS composition is tailored to the "configuration, tasking, in-place maintenance capability, and programmed supply support concepts for the specific units to be supported" (78:35). BLSS is a USAF WRM package of spares and repair parts "representing the difference between the peacetime operating stock levels expected to be available at the unit in wartime and its total wartime requirement for a specified period" (78:62). The BLSS support concept may include "spares support for depot-level repair, or for forward operation, rearward maintenance concepts, or other theater support concepts where the supported systems may be operating from locations other than that of the BLSS" (78:35). In most cases, however, BLSS is located with the supported unit. BLSS includes "spares, repair parts, and supplies to repair ancillary equipment such as support

equipment, emergency vehicles, and critical base facilities" (78:34). BLSS is authorized for units which have a "documented wartime tasking to operate in place," and it is authorized when "primary operating stock levels cannot sustain approved wartime scenarios" (78:36). During a general war, BLSS is not resupplied. Instead, BLSS is integrated with and used as operating stock. In general, each BLSS item must be reviewed at least annually "to ensure compliance with set item selection and computation policies, and to ensure continual update of item configurations and usage factors" (78:36).

Bare Base Assets. In the article, "Bare Base - A Runway, Source of Water, and Nothing Else," a bare base is defined as

a runway, taxiway and aircraft parking area with a source of water capable of being made potable. . . .A fully operational "Bare Base" is one which consists of a deployed squadron with all of its buildings, equipment and support facilities installed, and from which a combat operation is being carried out. (215:18)

Currently, the USAF deploys one of three bare base packages: Harvest Eagle, Harvest Bare, or Harvest Falcon. An interim bare base package, Bare Base 2000, will be used for concept evaluation and further refinement of Bare Base 2000 requirements (202;203).

The Harvest Eagle package, as developed in the late 1960s, contained the same categories as the Gray Eagle package. Typical examples include materiel handling equipment, food service equipment, POL, aircraft ordnance,

and vehicle maintenance equipment. However, reductions in size and weight of the equipment were astounding. Each 1,100 personnel set associated with the new Harvest Eagle package weighed only 325 tons--less than half the weight of the original Gray Eagle package. Nevertheless, even with these improvements, some heavy equipment items (i.e., firetrucks), were still too large for C-130 air transport (240:8). Another problem with the Harvest Eagle package was that it did not adequately support current state-of-the-art weaponry. Only limited airfield support could be provided as the maintenance of sophisticated electronics and guidance systems required precise humidity, dust, and temperature control--canvas tents are unable to provide the necessary environment (17:1-2;35). A reevaluation, due primarily to the inadequacy of current air transportable mobility support equipment, was in order.

Harvest Bare was thus born. A Harvest Bare package includes aircraft hangars, general purpose shelters, lightweight expandable shelters, dynel tents, integrated kitchen facilities, latrine and toilet facilities, electrical system, water distribution, skid-mounted cold water field laundries, air field lighting, environmental control systems, cargo transporters, lightweight furniture, liquid oxygen/liquid nitrogen (LOX/LN) generating plant, and a mobile, air transportable hospital (MATH) (262:24). An entire Harvest Bare set was also capable of supporting 4,500

personnel; however, it was also exceedingly weight intensive. It weighed in excess of 1,200 tons and required almost 400 C-130 sorties (262:25). Harvest Bare, although it provided both support and operational facilities, was simply too heavy and bulky to provide an effective, rapid deployment capability (262:25). Something else was needed. During the 1970s and early 1980s, Southwest Asia (SWA) became increasingly important in US strategic plans. US reliance on oil from that region, for example, made it imperative the US have the ability to respond quickly in the event of a SWA crisis. A lack of US bases in the region, coupled with the region's environment and the region's distance from US bases elsewhere around the globe, were a sampling of the problems to be addressed in defining the mobility concept for the region. To address such peculiar problems of mobility operations in Southwest Asia (SWA), a composite bare base set was developed. Its name--Harvest Falcon.

Harvest Falcon was initially composed of elements from both Harvest Eagle and Harvest Bare (66:51). Harvest Falcon resolved the conflicting requirements of mobility and capability by using synthetic fabric tents for personnel support facilities such as billets, showers, kitchens, and dining halls. Hard wall shelters, common in Harvest Bare sets, are used for facilities requiring carefully controlled environments such as avionics laboratories and surgery

clinics (254:17). This combination maximized the mobilization of the package while simultaneously minimizing the set-up time and energy requirements common of the bare base sets (66:51). Prepositioning of the Harvest Falcon sets in some SWA countries may serve nicely to reduce response time should the US be required to intervene in a foreign war or conflict--Desert Shield/Desert Storm is a case in point (66:51).

The foundation of the current concept of mobility is two-fold: first, it is based on the reluctance of the United States' allies and others to host permanent US installations and, second, it is based on the increased vulnerability of existing bases overseas. The current bare base concept has been defined as (262:25),

the ability to rapidly deploy a force, complete with shelters and support facilities, capable of independently supporting and launching sustained combat operations with the same independence as fixed theater installations.

Events of the 1980s led to the creation of the USAF's next generation bare base package. After a comprehensive reevaluation of the entire bare base program was conducted, improvements to the Harvest Bare package were in order. The Harvest Bare Revitalization resulted and was subsequently renamed Bare Base 2000 (202). The first Bare Base 2000 Implementation Conference, held 14-15 January 1988, developed program goals and established working groups (204). The second Bare Base 2000 Conference, held 2-4 May 1989, determined the composition of an interim equipment

package--a package consisting predominantly of current, selected Harvest Eagle, Harvest Bare, and Harvest Falcon assets (254:22).

Prepositioning Procurement Packages. The primary objective of the NATO PPP Program is to reduce transatlantic strategic airlift requirements in support of specific planned operational taskings. This is accomplished by prepositioning aircraft support equipment in squadron airlift support sets for European reinforcement units (209:1). The goal of the NATO PPP program is "to complete all USAFE actions necessary to requisition, receive, store, account, and maintain NATO PPP assets at, or as close as possible to, the locations of planned wartime use" (209:2). The concept was originated to "reduce strategic airlift requirements by prepositioning mobility type equipment in Europe for selected USAF forces that deploy by air from the continental United States" (209:2). Typical items stored are those types of equipment of high weight or volume which require minimum maintenance and which can be stored for long periods of time. These include such items as maintenance stands, aircraft jacks, towbars, generators, aircraft tugs, vehicles, deicers, air conditioners, and fire extinguishers. Today, the NATO PPP program is valued at \$4.6 billion (209).

Currently, 72 PPP storage locations exist throughout Europe. Host nations include Belgium, Denmark, Luxembourg, Germany, Greece, Italy, the Netherlands, Norway, Spain,

Turkey, and the United Kingdom (209:1-2). Most NATO PPP materiel is prepositioned on host nation airfields which do not currently have a USAF peacetime presence. Originally, NATO PPP prepositioning was thought to save about 700 C-141 airlift sorties. That estimate, due primarily to continued budget cuts, has dropped to 600 airlift sorties (209).

Forward Deployment and Reinforcement. Neither forward deployment nor reinforcement totally accomplishes military objectives because each has inherent advantages and disadvantages. Forward basing is "the stationing of military forces in a foreign nation" (190:1). Reinforcement, on the other hand, is "the augmentation of forward-based forces with CONUS-based forces, or the insertion of CONUS-based forces to areas where forward basing does not exist" (190:1)

The principle advantages and disadvantages of forward deployment and reinforcement strategies are summarized in Figure 26. While many consider cost a disadvantage to the forward deployment concept, a Congressional Budget Office report on alternatives to the C-17 aircraft concluded prepositioning duplicate equipment offers a major cost advantage over buying additional strategic air transport to move equipment (47:xvi). Given US decision-makers are accurate in predicting the site of a future war, and given proper actions are taken to adequately preposition assets at or near such a presupposed point of conflict, prepositioning is one approach to reduce the strategic transportation cost

of airlift and sealift. Prepositioning bridges the gap between forward deployment and reinforcement.

	<u>Forward Deployment</u>	<u>Reinforcement</u>
Advantages:	1. Showing the flag and US interest by providing security and stability. 2. Sensing a threat to US interests. 3. Allows the US to develop a military infrastructure for anticipated threats.	1. Flexibility 2. Cost savings, because forces are not committed to a specific region or country.
Disadvantages:	1. The expenses to lease facilities, land, support troops and transportation. 2. Requirement for a status of forces agreement that results in the acceptance of host nation political activities. 3. The loss of flexibility to respond to other crisis.	1. Requires strategic mobility transportation 2. Needs time to mobilize prepositioned equipment and personnel. 3. Vulnerability of storage sites.

Source: (190:ii)

FIGURE 26. Forward Deployment and Reinforcement

War Reserve Materiel Options

Option 1. Continue to preposition WRM stocks at or near current sites or other nearby overseas bases.

Basically, this concept represents an "if it isn't broke,

don't fix it" approach. Keeping in mind the most important job for a military logistician is getting war materiel to the right place in the right configuration at the right time, prepositioning offers many advantages as discussed earlier. However, if prepositioned assets are part of that picture, then the logistician's job becomes a bit more complex. Most importantly, actions must be taken to reduce the vulnerability of prepositioned sites as targets--a shared concern of senior decision-makers (42:206). Today's concept of multiple prepositioning sites throughout Europe is one measure to do just that. Some, however, believe fewer sites could be afforded better security. Simply put, eliminate many of the potential "targets." Instead of having approximately 100 prepositioning sites throughout Europe, establish only a handful of such sites. That is precisely the objective USAFE appears to have in mind. Its answer--Regional Logistics Support Centers (RELOG). This USAFE concept provides four prepositioned regional support centers which support collocated operating bases throughout central Europe. Only one note of caution comes to mind--one should avoid the temptation of "carrying all eggs in one basket." A few large prepositioning sites may be good for peacetime management, especially in a region where the perceived threat has diminished, but unwanted attention is still attracted.

Option 2. Preposition WRM stocks at or near stateside ports of embarkation. Certain areas in the CONUS are strategically located near both aerial and sea ports. Whether the situation required immediate attention or simply a suggestive deterrent flair would matter little. Assets would be convenient, in either case, to the means of strategic lift. In an effort to provide the highest level of security while simultaneously ensuring a high degree of flexibility, aircraft support equipment, for example, requiring infrequent maintenance could be prepositioned in the CONUS. Most major ports are surrounded by warehouses which could be used to store maintenance stands and towbars, for example, until needed for a contingency anywhere around the globe. No longer would decision-makers be required to evaluate the probability of a conflict at or near current prepositioning sites. Although such items might be subject to pilferage in the states, they would not, for all practical purposes, be subject to enemy destruction.

Option 3. Return WRM stocks to service supply accounts for subsequent redistribution to users. This option assumes senior decision-makers have determined the US is subject to limited threats--threats accompanied by long warning lead-times. It also presumes, for example, NATO countries are quite capable and willing to confront potential enemies with little or no immediate US support. Hence, prepositioned assets in overseas theaters are unwarranted. Although the

US should, and probably will, have some say in the matter (especially in areas of vital US security interests), this option, in all likelihood, would occur only in response to critical budget cuts at home or severed relations abroad.

Option 4. Sell, lend-lease, or donate to allied nations. This option takes into consideration the drawdown of forces overseas due to the "tide of democracy" sweeping throughout Europe. With the drawdown of US forces imminent and the "cold war" a phenomenon of the past, America could use all the help others are willing to offer in "policing" the world. What better way to confront a multitude of menaces than to offer Allied countries the unconditional use of US prepositioned equipment to squelch regional conflicts which could easily escalate to wider wars. The return on the investment could easily save countless US lives.

Summary

Air Force policy for the management of WRM is found in AFR 400-24. Future trends will likely change the shape of the current WRM program. Factors of primary importance include: external threats to US and Allied interests, international political situations, the US economy, and US national security objectives. These factors are in various states of metamorphosis, each requiring prudent anticipation in response to evolving political and military operational requirements.

As long as the US has military commitments abroad, WRM will remain a key program in America's capability to deter war, America's readiness to transition to war, and America's ability to sustain wartime operations. Fiscal constraints must be considered. For example, WRM is procured for exclusive use in a wartime environment and, with few exceptions, is not used to support peacetime requirements. Furthermore, WRM requirements are typically quite large and expensive. When competing with peacetime requirements for limited available funds, WRM requirements, more often than not, fare poorly. The experience of warfare has demonstrated the significant role of logistics

in providing the necessary strength when and where it has been needed most. . . .To ensure Air Force forces are the best equipped fighting force in the world, careful attention must be paid to the logistics system that maintains and supplies these forces in the field. This compels the Air Force to develop a logistics system that is simple, secure, and survivable, and one that ensures the required resources are available when and where they are needed in all combat environments. (72:4-9)

After considering the history and significance of War Reserve Materiel prepositioning, this chapter concluded with a presentation of several options concerning the future disposition of USAF WRM. The options presented are not exhaustive but do represent major alternatives available to today's defense planners and high-level decision-makers. Chapter IX considers the entire literature review of this effort and attempts to "make sense" of each option presented with regard to the bigger picture of current world affairs.

References Cited in Chapter Eight
(Numbers refer to Citations and Master Bibliography Listing)

5. Alger, R. A. The Spanish-American War. New York: Harper and Brothers Publishing, 1901.
17. Bedford, R., and M. Jaffe. Air Mobility Shelter Conceptual Study. Air Force Civil Engineering Center, Tyndall AFB FL, September 1975.
22. Bracken, Edward R., Major General, USAF. "Vietnam Logistics--Its Meaning for Tomorrow's Air Force," Air Force Journal of Logistics: 17-20 (Fall 1986).
35. Carstensen, John R., Captain, USAF. "Bare Base - Key to Air Force Mobility," The Military Engineer, 62: 168-169 (May/June 1970).
42. Clark, David T., Captain, USAF. Maintenance Procedures, Intervals and Storage of Prepositioned RED HORSE War Reserve Equipment. MS Thesis, AFIT/GEM/LSM/89S-6. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1989.
47. Congressional Budget Office (CBO). Improving Strategic Mobility: The C-17 Program and Alternatives. Washington DC: Congress of the United States, September, 1986.
60. Department of Defense. Dictionary of Military and Associated Terms. JSC Publication 1. Washington DC: Government Printing Office, April 1984.
61. Department of Defense. Management of War Reserve. DOD Directive 4140.2. Washington DC: Government Printing Office, 4 December 1974.
62. Department of Defense. Report of the Secretary of Defense for Fiscal Year 1978. Washington DC: Government Printing Office, 1977.
65. Department of the Air Force. 1990 Worldwide War Reserve Materiel (WRM) Conference Minutes. Washington DC: HQ USAF/LEYX, 10 January 1991.
66. Department of the Air Force. Air Force Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program. AFP 93-3. Washington DC: Government Printing Office.

68. Department of the Air Force. Bare-Base Conceptual Planning Guide. AFP 93-12, Volume III (Draft). Washington DC: Government Printing Office.
69. Department of the Air Force. Basic Aerospace Doctrine. AFM 1-1. Washington DC: HQ USAF, March 1984.
74. Department of the Air Force. USAF Mobility Planning. AFR 28-4. Washington DC: HQ USAF, May 1988.
78. Department of the Air Force. War Reserve Material (WRM) Policy. AFR 400-24. Washington DC: HQ USAF, November 1986.
79. Department of the Army. American Military History. Washington DC: Office of the Chief of Military History, Government Printing Office, 1973.
122. Headquarters, 833 Air Division. Background Paper on Bare Base Concept. HQ 833 AD/PA, Holloman AFB NM, 31 March 1972.
127. Horsman, Reginald. The War of 1812. New York: Alfred A. Knopf, Inc., 1969.
129. Howard, Michael. War in European History. Oxford England: Oxford University Press, 1976.
132. Huston, James A. "Challenging the Logistics Status Quo During the Civil War," Defense Management Journal: 25-33 (July 1976).
135. Huston, James A. The Sinews of War: Army Logistics, 1775-1953. Washington DC: Government Printing Office, 1966.
154. Kreidberg, Marvin A., Lieutenant Colonel, USA, and Merton G. Henry, First Lieutenant, USA. History of Military Mobilization in the United States Army, 1775-1945. Washington DC: Government Printing Office, 1955.
155. Krout, John A. United States Since 1865. New York: Barnes and Noble Books, 1973.
190. Moses, Glenn E., Major, USAF. Strategic Mobility, Introduction. Research Project, Air Command and Staff College (AU), Maxwell AFB AL, 1988.
202. Pianalto, Albert G., Colonel, USAF. Conference Notes for the Bare Base 2000 Implementation Conference, 3-5 May 1989, Holloman AFB NM. HQ TAC/LGX, Langley AFB VA, 26 February 1988.

203. Pianalto, Albert G., Colonel, USAF. "Minutes: Bare Base 2000 Conference, 2-4 May 1989, Holloman AFB NM." HQ TAC/LGX, Langley AFB VA, 30 June 1989.
204. Pianalto, Albert G., Colonel, USAF. "Minutes: Bare Base 2000 Implementation Conference, 14-15 January 1988, Holloman AFB NM." HQ TAC/LGX, Langley AFB VA, 26 February 1988.
209. Program Guidance Letter on NATO Prepositioning Procurement Program. Ramstein AB Germany: HQ USAFE/LGXWS, 1 January 1987.
215. Robinson, Maurice K., Jr., Captain, USAF. "Bare Base - A Runway, A Source of Water, and Nothing Else," Air Force Civil Engineer, 8: 18-20 (May 1967).
220. Rutenberg, David C., Lieutenant Colonel, USAF, and Jane S. Allen, editors. The Logistics of Waging War: American Logistics 1774-1985. Maxwell AFB AL, Air Force Logistics Management Center. Undated. Issued December 1986.
239. Tattini, Eugene L., Major, USAF. The War Reserve Materiel Management System. Research Study, Air Command and Staff College (AU), Maxwell AFB AL, 1977.
240. Tatum, Charles C., Lieutenant Colonel, USAF. TOTAL: Tactical Operations and Training at Large. Report 6080. Air War College (AU), Maxwell AFB AL, April 1976.
242. Trask, David F. The War With Spain in 1898. New York: MacMillan Publishing Company, Inc., 1981.
251. Van Creveld, Martin. Supplying War: Logistics from Wallenstein to Patton. New York: Cambridge University Press, 1977.
254. Weaver, Kenneth M., Captain, USAF. An Historical Analysis of the Air Force's Bare Base Concept and Equipment. MS Thesis, AFIT/GEM/LSR/89S-18. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1989.
262. Windham, Clifton T., Lieutenant Colonel, USAF, and Joseph H. Smith. "A New Frontier," Air Force Engineering and Services Quarterly, 24: 24-26 (Winter 1983). AFRP 85-1. Washington DC: Government Printing Office, 1983.
266. Wu, Sun Tzu. The Art of War. Harrisburg PA: The Military Science Publishing Company, 1957.

IX. Conclusions and Recommendations

Chapter Overview

This chapter presents a summary of the findings of this research. Although no single "optimum" solution is derived, its contents serve a higher calling--educating those who must take a stand, right or wrong, on decisions which affect the future of America's defense posture. History is the world's greatest teacher. The intelligent study of military logistics history provides insight into the evolution of strategic thought, the political and military objectives of warfare, the influence of technology on operational concepts, and the capabilities and limitations of military forces. Secretary of State, James Baker, reminds the world one glimpse at today's Soviet Union gives credence to the importance of fully comprehending the situation at hand.

Now we are living in a time when Western values are in the ascendancy, when our allies have become strong and, for the most part, prosperous. This changing world has challenged the Soviet Union. It is a challenge that the Soviet Union, acting on its own interests, has tried to meet through perestroika. Yes, we have heard claims of new thinking, and we have seen some of it translated into action. And we are saying to the Soviet Union: Let us continue. Free people can work together peacefully, linked by a common destiny. Let us deal, therefore, with the new problems of a different era guided by a vision of a free and peaceful world. (12)

History provides examples of success and failure in military operations--it provides clues relating to the reason for the success or failure. The learning possible from history must not be avoided.

Conclusions

The purpose of this study was to determine the future role USAF prepositioned central European WRM could be expected to play in light of dynamic, historical, international trends. This research traced the development of war reserve materiel in the United States Air Force from its inception just prior to the Revolutionary War to the present. Simply put, WRM was put into perspective. Isolating WRM would serve only to mislead and misinform those with the responsibility to make educated decisions with regard to US national security.

Special emphasis was given to several other areas of importance: military logistics, US and Soviet doctrine, current world affairs, and the strategic mobility triad. None of these areas can stand alone. Each is dependent on the others; each helps to shape American policy with regard to the others. WRM, as one small part of the strategic mobility triad, is routinely affected by its interdependence on these vital areas of interest. To be sure, each plays a distinct role in the projection of possible future trends and initiatives associated with USAF prepositioning of war reserves. One such initiative to improve the strategic placement of USAF War Reserve Materiel involves the creation of new and improved Regional Logistics Centers throughout central Europe.

Many recent events have catapulted the world on a new journey. The single most important event may well be the beginning of the end of the "cold war." For that reason, as well as others, current methods of ensuring peace through deterrence must continually be reevaluated, especially in Europe.

NATO is one of the great success stories, and it has guaranteed the peace in Europe, provided a shield for 40 years for freedom and prosperity. And now our Alliance faces new challenges at a time of historic transition as we seek to overcome the division of Europe. I call it 'beyond containment.' . . . The results would dramatically increase stability on the continent and transform the military map of Europe. We can and must begin now to set out a new vision for Europe at the end of this century. This is a noble mission that I believe the Alliance should be ready to undertake. And I have no doubt that we are up to the task. (30)

What enemies could do to undercut US national security interests, given perceived capabilities, and what they are apt to do at particular times and places, given all kinds of constraints, both are important.

From a historical perspective, it is reasonable to presume the supplies and equipment produced in one war tend to become, to some extent, the reserve of the next. Such reserves are important. They provide a cushion, of sorts, permitting industrial mobilization of a nation to meet materiel requirements--requirements that tend to grow by leaps and bounds, culminating in sophisticated and mechanized warfare. Best records indicate the US used at least 100 pounds of supplies per man per day in Vietnam. Desert Storm requirements were in excess of 150 pounds per

man per day. The next war or conflict could easily exceed 200 pounds of supplies per man per day. The study of military logistics history surfaces many problems common to many of the campaigns fought by US forces during the past 225 years. Although the history of such campaigns cannot always provide a single optimum solution to current problems, it can provide a fresh perspective and rekindled insight into those problems. As a minimum, history can establish a firm foundation from which the right kinds of questions may be asked.

For example, in the "old days," referring to the cold war of a bygone era, the US knew its enemy. In consonance with evolving US aerospace doctrine, the containment of Soviet expansion through deterrence was the "best" way to avoid war. Today, deterrence has a new ring. Smaller, leaner forces are the result of a far-reaching reassessment of US military strategy. It reflects what President Bush has described as a world less driven by an immediate threat to Europe and the danger of global war. This is not to say Soviet troops are not well-equipped. In fact, the USSR, even after considerable drawdowns from eastern Europe, will have the most formidable force on the continent. After all, America's senior decision-makers must keep Gorbachev's reforms in perspective. "He does not want to overturn the Soviet system; he wants to strengthen it. To paraphrase [Winston] Churchill from another context, Gorbachev did not

become general secretary to preside over the demise of the Communist Party" (194:204). The Soviet military and civilian leadership are currently in the midst of an in-depth and, perhaps, painful study of America's overwhelming AirLand Battle execution in Operation Desert Storm. Although some may wonder if the US is capable of mounting another similar effort, US leadership must take this opportunity to ensure America stays at least two steps ahead of the competition--whoever that may be. It is certain the Soviet Union is doing just that!

When Mikhail Gorbachev became Secretary General in March 1985, perestroika became the centerpiece of new political thinking in the USSR. Soviet military doctrine is the political policy of the Communist Party and the government in the military field. It directs moral-political indoctrination of the population as one means of preparing the nation for future war. Soviet leadership has much reason to support perestroika. Should the Soviet economy and its science and technology continue to lag, there is little doubt the future of the Soviet Union as a military superpower would be in jeopardy.

A watchful eye is needed. Perceived threats now need new priorities which indicate imminence as well as intensities. Otherwise, US defense decision-makers may prepare for the wrong wars at wrong times in wrong places with wrong enemies. With regard to USAF prepositioned WRM,

a catastrophe could easily befall the free world. Europe must remain the first regional priority. The Middle East and Latin America, because of political, economic, and military reasons, warrants reevaluation. Nations along the Pacific rim have displaced Europe as the primary US trading partner--their share presently approximates 25% more (57:6). Soviet threats presently are in dispute (6:3;38;139). A few facts, however, provide some perspective. Soviet military deployments are still immense, and likely will remain so, even if unilateral retrenchment proceeds as promised and every rational arms control proposal reaches fruition (unheard of peace overtures, maybe). Dimitry Manuilski's 1930 declaration prophesying the realities of the 1990s cannot be ignored. Nevertheless, "there's no longer a need to defend Europe against a sudden invasion from the Soviet Union and the Warsaw pact" (172). The probability that Soviet leadership will employ its power for aggressive purposes seems much diminished--internal troubles and Warsaw Pact disaffection divert their attention. Ethnic unrest rocks several Soviet socialist republics. Soviet interests in and influence over Third World clients such as North Korea, Cuba, and Vietnam are visibly receding. In a recent House Armed Service Committee report, the Defense Policy Panel reached the following conclusions about the changing Soviet threat:

- (1) The conventional threat to the US and NATO is greatly diminished and cannot be revived.

(2) The Soviet global conventional threat has also declined, although not as precipitously as in Europe.

(a) It seems increasingly clear, however, that the Soviet conventional threat is becoming an empty threat--large-scale Soviet military interventions outside Soviet territory seem beyond the Red Army's powers, no matter who rules in Moscow.

(3) While the Soviet Union continues to modernize its strategic forces, the risk of nuclear war has receded.

(4) Soviet military spending is clearly on the decline. The growing economic crisis in the Soviet Union raises serious doubt that the Soviets can maintain their current pace of weapons modernization and adds significant uncertainty about what the Soviet threat will look like in the future. (117)

Recommendations

Soviet threats may still deserve first place on the priority list, but US planners under such conditions might safely shift more attention to non-Soviet threats. For example, attention linked to Israel's survival, currently muted, could revive on short notice. More immigrants to that nation leave progressively less room for Palestinians, with detrimental effects on prospects for peace. Korea may still be a tinderbox, even in new light. Renewed attempts by hostile states to interdict Persian Gulf oil traffic could be more concerted than any previous efforts. These and other facts must be considered by US planners when conventional force requirements, including war reserve materiel, are to be evaluated. Other threats that may never materialize should also be considered. For example, a reunited and aggressive Germany is one possibility. Resurgent militarism in Japan is another. Unrestrained Islamic

fundamentalism could foster widespread instability. China's future relations with the US are still unsure. Although apparently slim, the probability of these threats, as well as other more prominent threats to US national security, should be carefully analyzed to determine what preparations (particularly WRM), if any, are warranted.

Some US objectives clearly require clarification, if not total revision. The need "to move six Army divisions, 60 tactical fighter squadrons, and one Marine Amphibious Brigade--all with initial support--to their combat positions [in NATO Europe] within 10 days" (256:175) is one candidate for reconsideration. Preparation for an implicit protracted nuclear war with the Soviet Union is another. US military commanders in chief who testified before the Senate Armed Services Committee in February 1990 agreed the USSR no longer is the overwhelming threat which has driven US military strategy since the end of WWII (171:10). The compulsion to contain communism in Third World countries could subside. In place of the Soviets and their communist ideologies, the military chiefs see new threats over the horizon--chemical weaponry in the Persian Gulf, narcotics trafficking in Central America, nuclear proliferation, and sophisticated weaponry throughout the Third World, among others (171:10). "Wishful thinking," according to

Mikhail Gorbachev, "is a dangerous occupation" (111:95). The eyes of the world are upon America. President Bush, addressing the 1991 Air Force Academy graduating class, put it into perspective. "We do not dictate the course nations follow, but neither can we overlook the fact that our examples reshape the world. We can't right all wrongs--but neither can any nation lead as we can" (29:23).

References Cited in Chapter Nine

(Numbers refer to Citations and Master Bibliography Listing)

6. Almond, Peter. "Cheney Splits With the CIA on Threat," Washington Times. March 5, 1990.
12. Baker, James A., III. Speech before the Center for Strategic and International Studies. May 4, 1989.
29. Bush, George. President of the United States. Speech given at the Air Force Academy commencement, May 29, 1991. "Bush Outlines Gulf Lessons for Air Force Academy Grads," Air Force Times, 51: 23-61+ (June 10, 1991).
30. Bush, George. President of the United States. Speech given at the NATO Headquarters. May 29, 1989.
38. Central Intelligence Agency. Director's statement before the House Armed Services Committee, 1 March 1990.
57. Department of Commerce, Bureau of the Census. FT 900 Supplement: Report on U.S. Merchandise Trade, March 1990. Washington DC: May 18, 1990.
111. Gorbachev, Mikhail S. Perestroika, New Thinking For Our Country and the World. New York: Harper and Row Publishers, Inc., 1987.
117. Gross, Richard C. "Military Strategies Reassessed," Aerospace and Defense Science, 9: 9 (October/November 1990).
139. Joint Military Net Assessment. Washington DC: Joint Chiefs of Staff, Government Printing Office, 6 March 1990.
171. Matthews, William. "The World According to the Top Commanders," The Air Force Times, 51: 10-12 (February 26, 1990).
172. Matthews, William. "US to Halve Forces in Europe as NATO Restructures," The Air Force Times, 52: 14 (June 10, 1991).
194. Nixon, Richard M. "American Foreign Policy: The Bush Agenda," Foreign Affairs, 68: 199-219 (Winter 1988/89).
256. Weinberger, Caspar, W. Annual Report to the Congress. Washington DC: Government Printing Office, 1984.

Appendix A
"The World Must be Made Safe for Democracy"

On April 2, 1917, President Woodrow Wilson made the following speech calling for a Declaration of War against Germany. His monologue follows:

I have called the Congress into extraordinary session because there are serious, very serious, choices of policy to be made, and made immediately, which it was neither right nor constitutionally permissible that I should assume the responsibility of making.

On the third of February last I officially laid before you the extraordinary announcement of the Imperial German Government that on and after the first day of February it was its purpose to put aside all restraints of law or of humanity and use its submarines to sink every vessel that sought to approach either the ports of Great Britain and Ireland or the western coasts of Europe or any of the ports controlled by the enemies of Germany within the Mediterranean. That had seemed to be the object of the German submarine warfare earlier in the war, but since April of last year the Imperial Government had somewhat restrained the commanders of its undersea craft in conformity with its promise then given to us that passenger boats should not be sunk and that due warning would be given to all other vessels which its submarines might seek to destroy, when no resistance was offered or escape attempted, and care taken that their crews were given at least fair chance to save their lives in their open boats. The precautions taken were meager and haphazard enough, as was proved in distressing instance after instance in the progress of the cruel and unmanly business, but a certain degree of restraint was observed. The new policy has swept every restriction aside. Vessels of every kind, whatever their flag, their character, their cargo, their destination, their errand, have been ruthlessly sent to the bottom without warning and without thought of help or mercy for those on board, the vessels of friendly neutrals along side those of belligerents. Even hospital ships and ships carrying relief to the sorely bereaved and stricken people of Belgium, though the latter were provided with safe-conduct through the proscribed areas by the German Government itself and were distinguished by unmistakable marks of identity, have been sunk with the same reckless lack of compassion or of principle.

I was for a little while unable to believe that such things would in fact be done by a government that had hitherto subscribed to the human practices of civilized nations. International law had its origin in the attempt to set up some law which would be respected and observed upon the seas, where no nation had right of dominion and where lay the free highways of the world. By painful stage after stage has that law been built up, with meager enough results, indeed, after all was accomplished that could be accomplished, but always with a clear view, at least, of what the heart and conscience of mankind demanded. This minimum of right the German Government has swept aside under the plea of retaliation and necessity and because it had no weapons which it could use at sea except these which it is impossible to employ as it is employing them without throwing to the winds all scruples of humanity or of respect for the understandings that were supposed to underlie the intercourse of the world. I am not now thinking of the loss of the property involved, immense and serious as that is, but only of the wanton and wholesale destruction of the lives of noncombatants, men, women, and children, engaged in pursuits which have always, even in the darkest periods of modern history, been deemed innocent and legitimate. Property can be paid for; the lives of peaceful and innocent people can not be. The present German submarine warfare against commerce is a warfare against mankind.

It is a war against all nations. American ships have been sunk, American lives taken, in ways which it has stirred us very deeply to learn of, but the ships and people of other neutral and friendly nations have been sunk and overwhelmed in the waters in the same way. There has been no discrimination. The challenge is to all mankind. Each nation must decide for itself how it will meet it. The choice we make for ourselves must be made with a moderation of counsel and a temperateness of judgment befitting our character and our motives as a nation. We must put excited feeling away. Our motive will not be revenge or the victorious assertion of the physical might of the nation, but only the vindication of right, of human right, of which we are only a single champion.

When I addressed the Congress on the twenty-sixth of February last, I thought that it would suffice to assert our neutral rights with arms, our right to use the seas against unlawful interference, our right to keep our people safe against unlawful violence. But armed neutrality, it now appears, is impracticable. Because submarines are in effect outlaws when used as the German submarines have been used against merchant shipping, it is impossible to defend ships against their attacks as the law of nations has assumed that merchantmen would

defend themselves against privateers or cruisers, visible craft giving them chase upon the open sea. It is common prudence in such circumstances, grim necessity indeed, to endeavor to destroy them before they have shown their own intention. They must be dealt with upon sight, if dealt with at all. The German Government denies the right of neutrals to use arms at all within the areas of the sea which it has prescribed, even in the defense of rights which no modern publicist has ever before questioned their right to defend. The intimation is conveyed that the armed guards which we have placed on our merchant ships will be treated as beyond the pale of law and subject to be dealt with as pirates would be. Armed neutrality is ineffectual enough at best; in such circumstances and in the face of such pretensions it is worse than ineffectual; it is likely only to produce what it was meant to prevent; it is practically certain to draw us into the war without either the rights or the effectiveness of belligerents. There is one choice we can not make, we are incapable of making: we will not choose the path of submission and suffer the most sacred rights of our nation and our people to be ignored or violated. The wrongs against which we now array ourselves are no common wrongs; they cut to the very roots of human life.

With a profound sense of the solemn and even tragical character of the step I am taking and of the grave responsibilities which it involves, but in unhesitating obedience to what I deem my constitutional duty, I advise that the Congress declare the recent course of the Imperial German Government to be in fact nothing less than war against the Government and people of the United States; that it formally accept the status of belligerent which has thus been thrust upon it; and that it take immediate steps not only to put the country in a more thorough state of defense but also to exert all its power and employ all its resources to bring the Government of the German Empire to terms and end the war.

What this will involve is clear. It will involve the utmost practicable cooperation in counsel and action with the governments now at war with Germany, and, as incident to that, the extension to those governments of the most liberal financial credits, in order that our resources may so far as possible be added to theirs. It will not involve the organization and mobilization of all the material resources of the country to supply the materials of war and serve the incidental needs of the nation in the most abundant and yet the most economical and efficient way possible. It will involve the immediate full equipment of the Navy in all respects but particularly in supplying it with the best means of dealing with the enemy's submarines. It will involve the

immediate addition to the armed forces of the United States already provided for by law in case of war at least 500,000 men who should, in my opinion be chosen upon the principle of universal liability to service, and also the authorization of subsequent additional increments of equal force so soon as they may be needed and can be handled in training. It will involve also, of course, the granting of adequate credits to the Government, sustained, I hope, so far as they can equitably be sustained by the present generation, by well conceived taxation.

I say sustained so far as may be equitable by taxation because it seems to me that it would be most unwise to base the credits which will now be necessary entirely on money borrowed. It is our duty, I most respectfully urge, to protect our people so far as we may against the very serious hardships and evils which would be likely to arise out of the inflation which would be produced by vast loans.

In carrying out the measures by which these things are to be accomplished we should keep constantly in mind the wisdom of interfering as little as possible in our own preparation and in the equipment of our own military forces with the duty--for it will be a very practical duty--of supplying the nations already at war with Germany with the materials which they can obtain only from us or by our assistance. They are in the field and we should help them in every way to be effective there.

I shall take the liberty of suggesting, through the several executive departments of the Government, for the consideration of your committees, measures for the accomplishment of the several objects I have mentioned. I hope that it will be your pleasure to deal with them as having been framed after very careful thought by the branch of the Government upon which the responsibility of conducting the war and safeguarding the nation will most directly fall.

While we do these things, these deeply momentous things, let us be very clear, and make very clear to all the world what our motives and our objects are. My own thought has not been driven from its habitual and normal course by the unhappy events of the last two months, and I do not believe that the thought of the nation has been altered or clouded by them. I have exactly the same things in mind now that I had in mind when I addressed the Senate on the twenty-second of January last, the same that I had in mind when I addressed the Congress on the third of February and on the twenty-sixth of February. Our object now, as then, is to vindicate the principles of peace and justice in the life of the world as against selfish and autocratic power and to set up amongst the really free and self-governed peoples of the world such a

concert of purpose and of action as will henceforth ensure the observance of those principles. Neutrality is no longer feasible or desirable where the peace of the world is involved and the freedom of its peoples, and the menace to that peace and freedom lies in the existence of autocratic governments backed by organized force which is controlled wholly by their will, not by the will of their people. We have seen the last of neutrality in such circumstances. We are at the beginning of an age in which it will be insisted that the same standards of conduct and of responsibility for wrong done shall be observed among nations and their governments that are observed among the individual citizens of civilized states.

We have no quarrel with the German people. We have no feelings towards them but one of sympathy and friendship. It was not upon their impulse that their Government acted in entering this war. It was not with their previous knowledge or approval. It was a war determined upon as wars used to be determined upon in the old, unhappy days when peoples were nowhere consulted by their rulers and wars were provoked and waged in the interest of dynasties or of little groups of ambitious men who were accustomed to use their fellow men as pawns and tools. Self-governed nations do not fill their neighbor states with spies or set the course of intrigue to bring about some critical posture of affairs which will give them an opportunity to strike and make conquest. Such designs can be successfully worked out only under cover and where no one has the right to ask questions. Cunningly contrived plans of deception or aggression, carried, it may be, from generation to generation, can be worked out and kept from the light only within the privacy of courts or behind the carefully guarded confidences of a narrow and privileged class. They are happily impossible where public opinion commands and insists upon full information concerning all the nation's affairs.

A steadfast concert for peace can never be maintained except by a partnership of democratic nations. No autocratic government could be trusted to keep faith within it or observe its covenants. It must be a league of honour, a partnership of opinion. Intrigue would eat its vitals away; the plottings of inner circles who could plan what they would and render account to no one would be a corruption seated at its very heart. Only free peoples can hold their purpose and their honour steady to a common end and prefer the interests of mankind to any narrow interest of their own.

Does not every American feel that assurance has been added to our hope for the future peace of the world by the wonderful and heartening things that have been happening within the last few weeks in Russia? Russia

was known by those who knew it best to have been always in fact democratic at heart, in all the vital habits of her thought, in all the intimate relationships of her people that spoke their natural instinct, their habitual attitude towards life. The autocracy that crowned the summit of her political structure, long as it had stood and terrible as was the reality of its power, was not in fact Russian in origin, character, or purpose; and now it has been shaken off and the great, generous Russian people have been added in all their naive majesty and might to the forces that are fighting for freedom in the world, for justice, and for peace. Here is a fit partner for a league of honour.

One of the things that has served to convince us that the Prussian autocracy was not and could never be our friend is that from the very outset of the present war it has filled our unsuspecting communities and even our offices of government with spies and set criminal intrigues everywhere afoot against our national unity of counsel, our peace within and without, our industries and our commerce. Indeed it is now evident that its spies were here even before the war began; and it is unhappily not a matter of conjecture but a fact proved in our courts of justice that the intrigues which have more than once come perilously near to disturbing the peace and dislocating the industries of the country have been carried on at the instigation, with the support, and even under the personal direction of official agents of the Imperial Government accredited to the Government of the United States. Even in checking these things and trying to extirpate them as we have sought to put the most generous interpretation possible upon them because we knew that their source lay, not in any hostile feeling or purpose of the German people towards us (who were, no doubt, as ignorant of them as we ourselves were), but only in the selfish designs of a Government that did what it pleased and told its people nothing. But they have played their part in serving to convince us at last that the Government entertains no real friendship for us and means to act against our peace and security at its convenience. That it means to stir up enemies against us at our very doors the intercepted note to the German Minister of Mexico City is eloquent evidence.

We are accepting this challenge of hostile purpose because we know that in such a government, following such methods, we can never have a friend; and that in the presence of its organized power, always lying in wait to accomplish we know not what purpose, there can be no assured security for the democratic governments of the world. We are now about to accept gage of battle with this natural foe to liberty and shall, if necessary, spend the whole force of the nation to check and nullify

its pretensions and its power. We are glad, now that we see the facts with no veil of false pretense about them, to fight thus for the ultimate peace of the world and for the liberation of its peoples, the German peoples included: for the rights of nations great and small and the privilege of men everywhere to choose their way of life and of obedience. **The world must be made safe for democracy.** (Emphasis added.) Its peace must be planted upon the tested foundations of political liberty. We have no selfish ends to serve. We desire no conquest, no domination for the sacrifices we shall freely make. We are but one of the champions of the rights of mankind. We shall be satisfied when those rights have been made as secure as the faith and the freedom of nations can make them.

Just because we fight without rancour and without selfish object, seeking nothing for ourselves but what we shall wish to share with all free peoples, we shall, I feel confident, conduct our operations as belligerents without passion and ourselves observe with proud punctilio the principles of right and of fair play we profess to be fighting for.

I have said nothing of the governments allied with the Imperial Government of Germany because they have not made war upon us or challenged us to defend our right and our honour. The Austro-Hungarian Government has, indeed, avowed its unqualified endorsement and acceptance of the reckless and lawless submarine warfare adopted now without disguise by the Imperial German Government, and it has therefore not been possible for this Government to receive Count Tarnowski, the Ambassador Government by the Imperial and Royal Government of Austria-Hungary; but that Government has not actually engaged in warfare against citizens of the United States on the seas, and I take the liberty, for the present at least, of postponing a discussion of our relations with the authorities at Vienna. We enter this war only where we are clearly forced into it because there are no other means of defending our rights.

It will be all the easier for us to conduct ourselves as belligerents in a high spirit of right and fairness because we act without animus, not in enmity towards a people or with the desire to bring any injury or disadvantage upon them, but only in armed opposition to an irresponsible government which has thrown aside all considerations of humanity and of right and is running amuck. We are, let me say again, the sincere friends of the German people, and shall desire nothing so much as the early reestablishment of intimate relations of mutual advantage between us--however hard it may be for them, for the time being, to believe that this is spoken from our hearts. We have borne with their present government

through all these bitter months because of that friendship--exercising a patience and forbearance which would otherwise have been impossible. We shall, happily, still have an opportunity to prove that friendship in our daily attitude and actions towards the millions of men and women of German birth and native sympathy who live amongst us and share out life, and we shall be proud to prove it towards all who are in fact loyal to their neighbours and to the Government in the hour of test. They are, most of them, as true and loyal Americans as if they had never known any other fealty of allegiance. They will be prompt to stand with us in rebuking and restraining the few who may be of a different mind and purpose. If there should be disloyalty, it will be dealt with a firm hand of stern repression; but if it lifts its head at all, it will lift it only here and there and without countenance except from a lawless and malignant few.

It is a distressing and oppressive duty, gentlemen of the Congress, which I have performed in thus addressing you. There are, it may be, many months of fiery trial and sacrifice ahead of us. It is a fearful thing to lead this great peaceful people into war, into the most terrible and disastrous of all wars, civilization itself seeming to be in the balance. But the right is more precious than peace, and we shall fight for the things which we have always carried nearest our hearts--for democracy, for the right of those who submit to authority to have a voice in their own governments, for the rights and liberties of small nations, for a universal dominion of right by such a concert of free peoples as shall bring peace and safety to all nations and make the world itself at last free. To such a task we can dedicate our lives and our fortunes, everything that we have, with the pride of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness and the peace which she has treasured. God helping her, she can do no other. (115:140-148)

Appendix B
A Date to Live in Infamy

Yesterday, December 7, 1941--a date which will live in infamy--the United States of America was suddenly and deliberately attacked by naval and air forces of the empire of Japan.

The United States was at peace with that Nation and, at the solicitation of Japan, was still in conversation with its Government and its Emperor looking toward the maintenance of peace in the Pacific. Indeed, one hour after Japanese air squadrons had commenced bombing in the American Island of Oahu, the Japanese Ambassador to the United States and his colleague delivered to our Secretary of State a formal reply to a recent American message. And while this reply stated it seemed useless to continue the existing diplomatic negotiations, it contained no threat or hint of war or of armed attack.

It will be recorded that the distance of Hawaii from Japan makes it obvious that the attack was deliberately planned many days or even weeks ago. During the intervening time the Japanese Government has deliberately sought to deceive the United States by false statements and expressions of hope for continued peace.

The attack yesterday on the Hawaiian Islands has caused severe damage to American naval and military forces. I regret to tell you that very many American lives have been lost. In addition American ships have been reported torpedoed on the high seas between San Francisco and Honolulu.

Yesterday the Japanese Government also launched an attack against Malaya.

Last night Japanese forces attacked Hong Kong.

Last night Japanese forces attacked Guam.

Last night Japanese forces attacked the Philippine Islands.

Last night Japanese forces attacked Wake Island.

And this morning the Japanese attacked Midway Island.

Japan has, therefore, undertaken a surprise offensive extending throughout the Pacific area. The facts of yesterday and today speak for themselves. The people of the United States have already formed their opinions and will understand the implications to the very life and safety of our Nation.

As Commander in Chief of the Army and Navy I have directed that all measures be taken for our defense.

But always will our whole Nation remember the character of the onslaught against us.

No matter how long it may take us to overcome this premeditated invasion the American people in their righteous might will win through to absolute victory.

I believe that I interpret the will of the Congress and of the people when I assert that we will not only defend ourselves to the uttermost but we will make it very certain that this form of treachery shall never again endanger us.

Hostilities exist. There is no blinking at the fact that our people, our territory, and our interests are in grave danger.

With confidence in our armed forces--with the unbounding determination of our people--we will gain the inevitable triumph--so help us God.

I ask that the Congress declare that since the unprovoked and dastardly attack by Japan on Sunday, December 7, 1941, a state of war has existed between the United States and the Japanese Empire. (219:165-167)

Appendix C
"Arsenal of Democracy"

On the evening of December 29, 1940, President Roosevelt was wheeled into the diplomatic reception room and seated in front of a plain desk covered with microphones indicating their networks: NBC, CBS, MBS. His monologue follows:

This is not a fireside chat on war. It is a talk on national security; because the nub of the whole purpose of your President is to keep you now, and your children later, and your grandchildren much later, out of a last-ditch war for the preservation of American independence and all the things that American independence means to you and to me and to ours. . . .

Never before since Jamestown and Plymouth Rock has our American civilization been in such danger as now. . . .

The Nazi masters of Germany have made it clear that they intend not only to dominate all life and thought in their own country, but also to enslave the whole of Europe, and then to use the resources of Europe to dominate the rest of the world.

There are two worlds that stand opposed to each other. In other words, the Axis not only admits but proclaims that there can be no ultimate peace between their philosophy or government and our philosophy of government. . . . The experience of the past two years has proven beyond doubt that no nation can appease the Nazis. No man can tame a tiger into a kitten by stroking it. . . . That American appeasers . . . tell you that the Axis powers are going to win anyway; that all this bloodshed in the world could be saved; that the United States might just as well throw its influence into the scale of a dictated peace, and get the best out of it that we can.

They call it a "negotiated peace." Nonsense! Is it a negotiated peace if a gang of outlaws surrounds your community and on threat of extermination makes you pay tribute to save your own skins?

Thinking in terms of today and tomorrow, I make the direct statement to the American people that there is far less chance of the United States getting into war, if we do all we can now to support the nations defending themselves against attack by the Axis than if we acquiesce in their defeat, submit timely to an Axis victory, and wait our turn to be the object of attack in another war later on.

If we are to be completely honest with ourselves, we must admit that there is risk in any course we may take. But I deeply believe that the great majority of our people agree that the course that I advocate involves the least risk now and the greatest hope for world peace in the future. . . .You can, therefore, nail any talk about sending armies to Europe as deliberate untruth.

Our national policy is not directed toward war. Its sole purpose is to keep war away from our country and our people. . . .We must be the great arsenal of democracy. For us this is an emergency as serious as war itself. . . .

There will be no "bottlenecks" in our determination to aid Great Britain. No dictator, no combination of dictators, will weaken that determination by threats of how they will construe that determination. . . .

I believe that the Axis powers are not going to win this war. I base that belief on the latest and best information. As President of the United States I call for that national effort. I call for it in the name of this nation which we love and honor and which we are privileged and proud to serve. I call upon our people with absolute confidence that our common cause will greatly succeed. (218:27-29)

Appendix D
Glossary of Acronyms

AAC - US Army Air Corps
AAF - US Army Air Forces
AB - Air Base
ADCOP - Acquisition and Distribution of Commercial Products
AFB - Air Force Base
AFCOMS - Air Force Commissary Service
AFIT - Air Force Institute of Technology
AFLC - Air Force Logistics Command
AFLMC - Air Force Logistics Management Center
AFM - Air Force Manual
AFP - Air Force Pamphlet
AFR - Air Force Regulation
AFRES - Air Force Reserves
AFSF - Air Force Stock Fund
AGE - Aerospace Ground Equipment
AGM - Air-to-Ground Missile
AIM - Air Intercept Missile
AKA - Also Known As
AL - Allowable Load
ALC - Air Logistics Center
ANG - Air National Guard
APS - Afloat Prepositioning Ships
ARC - Air Reserve Component
ATA - Air Transport Association
ATC - Air Transport Command
ATS - Army Transport Service
AU - Air University
AWACS - Airborne Warning and Control System
BASS - Base Augmented Support Set
BB - Bare Base
BDFA - Basic Daily Food Allowance
BLSS - Base Level Self-Sufficiency Spares
CAS - Combat Ammunition System
CASF - Composite Air Strike Force
CBO - Congressional Budget Office
CIA - Central Intelligence Agency
CINC - Commander-in-Chief
CMMS - Congressionally Mandated Mobility Study
COB - Collocated Operating Base
CONUS - Continental United States
CPSU - Communist Party of the Soviet Union
CRAF - Civil Reserve Air Fleet
DC - District of Columbia
DG - Defense Guidance
DLA - Defense Logistics Agency
DOD - Department of Defense
DOS - Days of Sustainability (Support)
DTIC - Defense Technical Information Center
EOD - Explosive Ordnance Disposal

EPSF - Expenditure Per Sortie Factor
 ERRC - Expendability, Repairability, Recoverability Code
 EWO - Emergency War Order
 FEAF - Far East Air Force
 FLAS - Fuels Logistical Area Summary
 FM - Field Manual
 FMC - Fully Mission Capable
 FMSE - Fuels Mobility Support Equipment
 FOL - Forward Operating Location
 FSF - Fleet Service Forces
 FSS - Fast Sealift Ships
 FY - Fiscal Year
 GAO - Government Accounting Office
 GHQ - General Headquarters
 GMT - Greenwich Mean Time
 GNP - Gross National Product
 GPO - Government Printing Office
 HQ - Headquarters
 ICBM - Inter-Continental Ballistic Missile
 JCS - Joint Chiefs of Staff
 JDA - Joint Deployment Agency
 JU - Joint Use
 LB - Limited Base
 LGX - Logistics Plans and Procedures
 LIMFAC - Limiting Factor
 LRU - Line Replaceable Unit
 MAB - Marine Amphibious Brigade
 MAC - Military Airlift Command
 MAGTF - Marine Air Ground Task Force
 MAJCOM - Major Command
 MB - Main Base
 MEB - Marine Expeditionary Brigade
 MFF - Meal, Flight Feeding
 MISCAP - Mission Capable
 MM - millimeter
 MOB - Main Operating Base
 MPF - Maritime Prepositioned Force
 MPFS - Maritime Prepositioned Force Squadron
 MPS - Maritime Prepositioning Ship
 MRE - Meal, Ready-to-Eat
 MSC - Military Sealift Command
 MSK - Mission Support Kit
 MTM/D - Millions of Ton Miles per Day
 MTMC - Military Traffic Management Command
 NA - Not Applicable
 NACA - National Advisory Committee for Aeronautics
 NATO - North Atlantic Treaty Organization
 NATS - Naval Air Transport Service
 NDRF - National Defense Reserve Fleet
 NFAF - Naval Fleet Auxiliary Force
 NKPA - North Korean People's Army
 NMC - Not Mission Capable

NRTS - Not Repairable This Station
 NSA - National Security Administration
 NSC - National Security Council
 NSRB - National Security Resources Board
 NTS - Naval Transportation Service
 OPLAN - Operations Plan
 OSD - Office of the Secretary of Defense
 OWRM - Other War Reserve Materiel
 PAA - Primary Aircraft Authorization
 PACAF - Pacific Air Forces
 POB - Planned Operating Base
 POD - Point of Debarkation
 POE - Point of Embarkation
 POL - Petroleum, Oil, and Lubricants
 POMCUS - Prepositioning of Materiel Configured to Unit Sets
 POS - Primary Operating Stocks
 PPP - Prepositioning Procurement Package
 PWRM - Prepositioned War Readiness Materiel
 RCW - Rations, Cold Weather
 RDF - Rapid Deployment Force
 RELOG - Regional Logistics Centers
 ROK - Republic of Korea
 RO/RO - Roll On/Roll Off
 RR - Remove and Replace
 RRF - Ready Reserve Force
 RRR - Remove, Repair, and Replace
 SAC - Strategic Air Command
 SALT - Strategic Arms Limitation Treaty
 SAM - Surface to Air Missile
 SASS - SIOP Additive Support Spares
 SB - Stand-by Base
 SEA - Southeast Asia
 SECDEF - Secretary of Defense
 SIOP - Single Integrated Operational Plan
 SLBM - Submarine-Launched Ballistic Missile
 SL - SeaLand
 SLCM - Sea-Launched Cruise Missile
 SME - Standard Mobility Equipment
 SMESA - Special Middle East Sealift Agreement
 SOF - Special Operations Force
 SRBM - Short-Range Ballistic Missile
 STAMP - Standard Air Munitions Package
 STRAPP - Standard Tanks, Racks, Adapters, and Pylons Package
 SWA - Southwest Asia
 TA - Table of Allowance
 TAC - Tactical Air Command
 TDY - Temporary Duty
 TOW - Tube-launched, Optically-tracked, Wire-commanded
 TPFDD - Time Phase Force Deployment Data
 TPFDL - Time Phase Force Deployment Data Listing
 TRANSCOM - US Transportation Command
 TRAP - Tanks, Racks, Adapters, and Pylons

TV - Television
TVD - Theater of Military Operations
TWA - Trans-World Airways
UN - United Nations
US - United States
USA - United States Army
USAF - United States Air Force
USAFE - United States Air Forces-Europe
USMC - United States Marine Corps
USN - United States Navy
USNS - United States Naval Ship
USSR - Union of Soviet Socialist Republics
UTC - Unit Type Code
VAL - Vehicle Authorization List
WAA - Wartime Aircraft Activity
WARCON - War Consumables Factors File
WARMAPS - Wartime Manpower Mobilization Planning System
WASP - Wartime Additive Spares Package
WCDO - War Consumables Distribution Objective
WMP - War and Mobilization Plan
WPARR - War Plans Additive Requirements Report
WRM - War Reserve Materiel
WRSK - War Readiness Spares Kit
WSA - War Shipping Administration
WWI - World War One
WWII - World War Two
Z - Zulu

Bibliography

1. "Aerospace World," Air Force Magazine, 74: 29-35+ (May 1991).
2. Agnew, Donald H. and William A. Kinney. "American Wings Soar Around the World," National Geographic, 84: 57-78 (July 1943).
3. "Air Transport Command in the War Against Japan, The," The United States Strategic Bombing Survey No. 68. Washington DC: Military Analysis Division, December 1946.
4. Akehurst, General Sir John. "NATO and Europe: Practical Issues and Interests," Journal of the Royal United Services Institute for Defense Studies: 9 (Spring 1989).
5. Alger, R. A. The Spanish-American War. New York: Harper and Brothers Publishing, 1901.
6. Almond, Peter. "Cheney Splits with CIA on Threat," Washington Times. March 5, 1990.
7. Anderson, Casey. "Hyperwar Success May Alter AF Doctrine," Air Force Times, 51: 24 (April 22, 1991).
8. Arnold, Henry H., General, USA. Global Missions. New York: Harper & Brothers, 1949.
9. Auster, Bruce B. "Choose Your Own Weapon," US News and World Report, 109: 47 (August 13, 1990).
10. Auster, Bruce B. "In the Footsteps of Two Georges," US News and World Report, 110: 26-27 (February 4, 1991).
11. Badger, Oscar C., Vice Admiral, USN. "Problems of Command and Logistics." Speech before the Industrial College of the Armed Forces. Washington DC, November 18, 1949.
12. Baker, James A., III. Speech before the Center for Strategic and International Studies. May 4, 1989.
13. Badow, Doug. "Merchant Marine Sinks Oceans of Money," The Wall Street Journal: 20 (September 12, 1988).
14. Barciak, Francis J. Jr., Major, USA. Assistant Professor of Logistics Management. Personal interviews conducted by Captain David Clark. AFIT School of Systems and Logistics, Wright-Patterson AFB OH, 4 August through 5 May 1989.

15. Barnaby, Richard J., Lieutenant Colonel, USA, et al. Mobilization Studies Report Prepositioning of Material Configured to Unit Sets: Measurements of Readiness. Research Report, The Industrial College of the Armed Forces National Defense University, Ft. McNair: Washington DC, 5 July 1985.
16. Becker, James W. European Civil Air: Can NATO Count On It? Washington DC: Government Printing Office, 1989.
17. Bedford, R., and M. Jaffe. Air Mobility Shelter Conceptual Study. Air Force Civil Engineering Center, Tyndall AFB FL, September 1975.
18. Bender, David, and Leone Bruno, editors. The Vietnam War. San Diego CA: Greenhaven Press, 1990.
19. Blair, Clay. The Forgotten War. New York: TIME Books, 1987.
20. Bowers, Ray L. Tactical Airlift. Washington DC: Office of Air Force History, 1983.
21. Boyce, Stephen D., Lieutenant Colonel, USAF. "Strategic Mobility and the Decline of the United States Merchant Marine." A defense analytical study, Air War College (AU), Maxwell AFB AL, 1989.
22. Bracken, Edward R., Major General, USAF. "Vietnam Logistics--Its Meaning for Tomorrow's Air Force," Air Force Journal of Logistics: 17-20 (Fall 1986).
23. Bramley, Eric. "Ton-a-Minute Being Flown on ATC India-China Run," American Aviation: 20-23 (May 15, 1945).
24. Brumberg, Abraham. "What it takes to get from here to there," US News and World Report, 108: 41 (March 26, 1990).
25. Budiansky, Stephen. "A Messy, Dangerous World," US News and World Report, 109: 10-11 (August 13, 1990).
26. Budiansky, Stephen. "Lines in the Sand," US News and World Report, 109: 28-34 (October 1, 1990).
27. Burshnick, Anthony J., Colonel, USAF, and Markwell A. Fletcher, Lieutenant Colonel, USAF. History of Strategic Airlift. A research report, Air War College (AU), Maxwell AFB AL, 1976.
28. Burton, Sandra. "One Year Later," TIME, 135: 58-59 (June 4, 1990).

29. Bush, George. President of the United States. Speech given at the Air Force Academy commencement, May 29, 1991. "Bush Outlines Gulf Lessons for Air Force Academy Grads," Air Force Times, 44: 23-61+ (June 10, 1991).
30. Bush, George. President of the United States. Speech given at the NATO Headquarters. May 29, 1989.
31. Bush, George. President of the United States. State of the Union Address. January 29, 1991.
32. Butcher, Paul D. "Military Sealift Command," Defense Transportation Journal: 30 (February 1989).
33. Butler, Katherine. "Operation Desert Storm: The Logistical Story," Government Executive: 41 (May 1991).
34. Carlisle, A. H. Trost. "SOS for the Merchant Marine," Defense 89: 15 (March/April 1989).
35. Carstensen, John R., Captain, USAF. "Bare Base - Key to Air Force Mobility," The Military Engineer, 62: 168-169 (May/June 1970).
36. "Case for War, The," Newsweek, 116: 28-30 (October 29, 1990).
37. Cave, Hugh B. Wings Across the World: The Story of the Air Transport Command. New York: Dodd, Mead and Company, 1945.
38. Central Intelligence Agency. Director's Statement before the House Armed Services Committee. March 1, 1990.
39. Chandler, Charles DeForest, and Frank P. Lahm. How Our Army Grew Wings. New York: Ronald Press Company, 1943.
40. Christopher, Billy, editor. Fodor's Soviet Union. New York: Fodor's Travel Publications, Inc., 1991.
41. Chuvikov, P. A., Soviet Colonel. Marxism-Leninism on War and Army, 2nd ed. Moscow: Voenizdat, 1956.
42. Clark, David T., Captain, USAF. Maintenance Procedures, Intervals and Storage of Prepositioned RED HORSE War Reserve Equipment. MS Thesis, AFIT/GEM/LSM/89S-6. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1989.
43. Clausewitz, Karl von. On War. Washington: Infantry Journal Press, 1950.

44. Cleveland, Reginald M. Air Transport at War. New York: Harper and Brothers Publishers, 1946.
45. Clinton, Berry. "The Civil Reserve Air Fleet: National Airlift Asset," The Air Force Magazine, 63: 54-59 (February 1980).
46. Cloud, Stanley W. "Gathering Storm," TIME, 136: 24-28 (September 3, 1990).
47. Congressional Budget Office (CBO). Improving Strategic Mobility: The C-17 Program and Alternatives. Washington DC: Congress of the United States, September, 1986.
48. Craven, Wesley Frank, and James Lea Cate, editors. "Plans and Early Operations," The Army Air Forces in World War II, vol 1. Chicago: The University of Chicago Press, 1948.
49. Craven, Wesley Frank, and James Lea Cate, editors. "Torch to Point-Blank," The Army Air Forces in World War II, vol 2. Chicago: The University of Chicago Press, 1949.
50. Craven, Wesley Frank, and James Lea Cate, editors. "Men and Planes," The Army Air Forces in World War II, vol 6. Chicago: The University of Chicago Press, 1955.
51. Craven, Wesley Frank, and James Lea Cate, editors. "Services Around the World," The Army Air Forces in World War II, vol 7. Chicago: The University of Chicago Press, 1958.
52. Dann, Richard R. "Strategic Air Command," Air Force Magazine, 29: 35-36 (August 1946).
53. Davis, Raymond G., General, USMC. "Politics and War: Twelve Decisions that Rendered Defeat in Vietnam," Marine Corps Gazette: 75-78 (August 1989).
54. DeHaven, Oren E., Lieutenant General, USA. Director for Logistics (J-4). Address to the Military Airlift Committee of National Defense Transportation Association. Charleston AFB SC, 5 May 1982.
55. Denton, Jeremiah A., Chairman, U.S. Senator. First Report of the Commission on Merchant Marine and Defense: Conclusions. Washington DC: Government Printing Office, 30 September 1987.
56. Department of Commerce, Maritime Administration. Vessel Inventory Report. June 30, 1980.

57. Department of Commerce, Bureau of the Census. FT 900 Supplement: Report on US Merchandise Trade, March 1990. Washington DC: May 18, 1990.
58. Department of Defense. Annual Report of the Secretary of Defense to the Congress, for the Fiscal Year 1987. Washington DC: Government Printing Office, 1986.
59. Department of Defense. A Pocket Guide to NATO. DOD PG-30A. Washington DC: Office of Secretary of Defense, August 1987.
60. Department of Defense. Dictionary of Military and Associated Terms. JCS Publication 1. Washington DC: Joint Chiefs of Staff, Government Printing Office, April 1984.
61. Department of Defense. Management of War Reserve. DOD Directive 4140.2. Washington DC: Government Printing Office, 4 December 1974.
62. Department of Defense. Report of the Secretary of Defense for the Fiscal Year 1978. Washington DC: Government Printing Office, 17 January 1977.
63. Department of Defense. Single Manager Assignment for Ocean Transportation. DOD Directive 5160.10. Washington DC: Government Printing Office, 9 July 1970.
64. Department of Defense. Soviet Military Power 1990, 9th ed. Washington DC: Office of Secretary of Defense, September 1990.
65. Department of the Air Force. 1990 Worldwide War Reserve Materiel (WRM) Conference Minutes. Washington DC: HQ USAF/LEYX, 10 January 1991.
66. Department of the Air Force. Air Force Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program. AFP 93-3. Washington DC: Government Printing Office.
67. Department of the Air Force. Air Force Glossary of Standardized Terms. AFM 11-1. Washington DC: HQ USAF, 29 September 1989.
68. Department of the Air Force. Bare Base Conceptual Planning Guide. AFP 93-12, Volume III (Draft). Washington DC: Government Printing Office.
69. Department of the Air Force. Basic Aerospace Doctrine. AFM 1-1. Washington DC: HQ USAF, March 1984.

70. Department of the Air Force. Compendium of Authenticated Systems and Logistics Terms, Definitions and Acronyms. Air Force Institute of Technology, Wright-Patterson AFB OH, 1981.
71. Department of the Air Force. Followup Audit--Selected Prepositioned War Reserve materiel Assets in USAFE. USAF Audit Agency, Project 7085519. Norton AFB CA, 4 August 1987.
72. Department of the Air Force. United States Air Force Basic Doctrine. AFM 1-1. Washington DC: Government Printing Office, 1964.
73. Department of the Air Force. United States Air Force Basic Doctrine. AFM 1-2. Washington DC: Government Printing Office, 1 April 1953.
74. Department of the Air Force. USAF Mobility Planning. AFR 28-4. Washington DC: HQ USAF, May 1988.
75. Department of the Air Force. USAF Mobility Planning. AFR 28-4, 7th Bombardment Wing (SAC) Supplement. Carswell AFB TX: May 1990.
76. Department of the Air Force. USAF Operation Planning Process. AFR 28-3. Washington DC: HQ USAF, July 1986.
77. Department of the Air Force. War and Mobilization Plan. Volume 1, Annex S. Washington DC: HQ USAF, July 1988, p S-7.
78. Department of the Air Force. War Reserve Material (WRM) Policy. AFR 400-24. Washington DC: HQ USAF, November 1986.
79. Department of the Army. American Military History. Washington DC: Office of the Chief of Military History, Government Printing Office, 1973.
80. Department of the Army. Operations. FM 100-5. Washington DC: Government Printing Office, May 1986.
81. Department of the Army. Prepositioning of Material Configured to Unit Sets. US Army Audit Agency, Report: EU 87-209. Mannheim Germany, 29 April 1987.
82. Deputy Secretary of Defense, The. Memorandum for Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, Assistant Secretary of Defense (MRA&L). Washington DC, 1981.

83. Dictionary of Basic Military Terms. Moscow: Voenizdat, 1965.
84. Dilla, Benjamin L., Major, USAF. "Logistics Support Limitations in the Vietnam War: Lessons for Today's Logisticians," Air Force Journal of Logistics, 14: 35-37 (Fall 1990).
85. Discriminate Deterrence. Report of the Committee on Integrated Long-Term Strategy. Washington DC: Government Printing Office, January 1988.
86. Dmitri, Ivan. Flight to Everywhere. New York: McGraw-Hill Book Company, Inc., 1944.
87. Duffy, Brian, et al. "The Man Who Would Be King," US News and World Report, 109: 20-25 (August 13, 1990).
88. Duffy, Brian, et al. "The Right Stuff," US News and World Report, 109: 24-31 (February 4, 1991).
89. Eddowes, Michael H. B. Khrushchev Killed Kennedy. Dallas: Eddowes Dallas Foundation, 1985.
90. Elowitz, Larry, and John W. Spanier. "Korea and Vietnam: Limited War and the American Political System," ORBIS, 18: 510-527 (Summer 1974).
91. Endicott, John E., and Roy W. Stafford, Jr. American Defense Policy. Baltimore MD: John Hopkins University Press, 1978.
92. Federov, G. A., et al. Marxism-Leninism on War and Army, 1st ed. Moscow: Voenizdat, 1961.
93. Federov, G. A., et al. Marxism-Leninism on War and Army, 3rd ed. Moscow: Voenizdat, 1962.
94. Field, James A., Jr. History of United States Naval Operations Korea. Washington DC: Government Printing Office, 1962.
95. Finney, Robert T. History of the Air Corps Tactical School, 1920-1940, historical study 100. Maxwell AFB AL: Research Studies Institute, 1955.
96. Fitzgerald, C. P. Communism Takes China. New York: American Heritage Press, 1971.
97. "Force Projection," Air Force Issues: US Government, Spring, 1987.

98. Franklin, Carl E., Colonel, USAF. The Efficacy of Prepositioning. Research Report, The Industrial College of the Armed Forces National Defense University, Ft. McNair: Washington DC, March 1985.
99. Frunze, Mikhail V. "A Unified Military Doctrine for the Red Army." From The Soviet Art of War. W. F. and H. F. Scott, editors. Boulder CO: Westview Press, 1982.
100. Futrell, Robert Frank. Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907-1960, volume I. Maxwell AFB AL: Air University Press, 1989.
101. Futrell, Robert Frank. Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984, volume II. Maxwell AFB AL: Air University Press, 1989.
102. Futrell, Robert F. The United States Air Force in Korea. Washington DC: Office of Air Force History, 1983.
103. Gates, Byron E., Brigadier General, USA. Chief, management control, Army Air Forces. The Air Forces in Theaters of Operations: Organization and Functions. Washington DC: Government Printing Office, 1943.
104. Gay, Peter. FREUD: A Life for Our Time. New York: W.W. Norton and Company, 1988.
105. George, Harold L., Lieutenant General, USA. Commanding General of the Air Transport Command. "The ATC, Here to Stay," Army and Navy Journal, 83: 653, 682 (January 19, 1946).
106. Glines, Carroll V., Jr., Lieutenant Colonel, USAF (ret). The Compact History of the United States Air Force. New York: Hawthorn Books, Inc., 1963.
107. Goldberg, Alfred, editor. A History of the United States Air Force, 1907-1957. Princeton NJ: D. Van Nostrand Company, Inc., 1957.
108. Goldrich, Robert L., and Stephen Daggett. Defense Goals of the 1990s, Issue Brief IB 90013. Washington DC: Congressional Research Service, May 22, 1990.
109. Goodpastor, Andrew J., and Samuel P. Huntington. Civil-Military Relations. Washington DC: American Enterprise Institute for Public Policy Research, 1977.
110. Goodwin, Roy M., Brigadier General, USAF. "Meeting Minutes of the TAF RED HORSE Steering Committee, 11 Dec 87." Correspondence. HQ TAC/DE, Langley AFB VA, 25 Jan 88.

111. Gorbachev, Mikhail S. Perestroika, New Thinking For Our Country and the World. New York: Harper and Row Publishers, Inc., 1987.
112. Gorell, Edgar S., Colonel, USA. The Measure of America's World War Aeronautical Effort. Burlington VT: Lane Press, 1940.
113. Gough, Terrence J. US Mobilization and Logistics in the Korean War. Washington DC: Center of Military History, United States Army, 1987.
114. Grechko, A. A. Armed Forces of the Soviet State, 1st ed. Moscow: Voenizdat, 1974.
115. Gregory, Ross. The Origins of American Intervention in the First World War. New York: W.W. Norton & Company, Inc., 1971.
116. Gropman, Alan. "Success in Persian Gulf Validates Air Force Doctrine," Air Force Times, 52: 23 (March 18, 1991).
117. Gross, Richard C. "Military Strategies Reassessed," Aerospace and Defense Science, 9: 9 (October/November 1990).
118. Guidry, Vernon A., Jr. "Very Fast Ships," Military Logistics Forum, 1: 46-51+ (May 1985).
119. Harless, Larry L., Major, USA. "A POMCUS Primer," Army Logistician, 15: 6-9 (March-April 1983).
120. Harrington, Thomas C., Major, USAF. "The Defense Transportation System: Giving Direction to Change." Unpublished research report. Wright-Patterson AFB OH, December 1981.
121. Hayward, Thomas, Admiral, USN.
122. Headquarters, 833 Air Division. Background Paper on Bare Base Concept. HQ 833 AD/PA, Holloman AFB NM, 31 March 1972.
123. Heflin, Woodford Agee, editor. United States Air Force Dictionary. Washington DC: Air University Press, 1956.
124. Heiser, Joseph M., Lieutenant General, USA. "Vietnam Logistics: Past is Prologue?" Defense Management Journal, 12: 74-80 (July 1976).
125. Heiser, Joseph M., Lieutenant General, USA. "Logistics Support." Department of the Army, Vietnam Studies. Washington DC: 15 December 1972 (published 1974).

126. Holy Bible, The. King James version. Book of St. Mathew, chapter 7, verse 15.
127. Horsman, Reginald. The War of 1812. New York: Alfred A. Knopf, Inc., 1969.
128. House of Representatives. Department of Defense Appropriations for 1982: Hearings before a subcommittee of the Committee on Appropriations. 94th Congress, 1st session, 1981.
129. Howard, Michael. War in European History. Oxford England: Oxford University Press, 1976.
130. Huntington, Samuel P. The Common Defense. New York: Columbia University Press, 1961.
131. Hurley, Alfred F., Major, USAF. Billy Mitchell, Crusader for Air Power. New York: Franklin Watts, 1964.
132. Huston, James A. "Challenging the Logistics Status Quo During the Civil War," Defense Management Journal: 25-33 (July 1976).
133. Huston, James A. "Korea and Logistics," Military Review, 36: 18-32 (February 1957).
134. Huston, James A. "Korean Logistics." An unpublished manuscript (June 1960).
135. Huston, James A. The Sinews of War: Army Logistics 1775-1953. Department of the Army, Office of the Chief of Military History, 1966.
136. Institute for Foreign Policy Analysis, Inc. "U.S. Strategic Airlift: Requirements and Capabilities," National Security Papers, January 1986.
137. Ivanov, Semyon P., Soviet General. "Soviet Military Doctrine and Strategy," Military Thought. May 1969. From Joseph D. Douglas, Jr., and Amoretta M. Hoeber's "Selected Readings from Military Thought, 1963-1973, vol 5, Part 2" (English translation). Washington DC: Government Printing Office, 1982.
138. Johnson, Maxwell Orme, Major, USMC. "U.S. Strategic Options in the Persian Gulf," Proceedings: 53-59 (February 1981).
139. Joint Military Net Assessment. Washington DC: Joint Chiefs of Staff, Government Printing Office, 6 March 1990.

140. Jones, David G., General, USAF. Chairman of the Joint Chiefs of Staff. National Strategic Mobility Conference. Defense Transportation Journal, 36. (August 1980).
141. Kahan, Jerome H. Security in the Nuclear Age. Washington DC: The Brookings Institute, 1975.
142. Kaiser, Robert G. "The USSR in Decline," Foreign Affairs, 67: 93-113 (Winter 1988/89).
143. Kendall, Michael. "An Inflexible Response: United States Army Manpower Mobilization Policies, 1945-1957." A Ph.D. dissertation, Duke University, 1982.
144. Khrushchev, Nikita S. "Report on the Central Committee CPSU to the Twentieth Party Congress," On Peaceful Coexistence. Moscow: Foreign Languages Publishing House, 1961.
145. Kin'yan, M. M., editor. Military-Technical Progress and the Armed Forces USSR. Moscow: Voenizdat, 1982.
146. Kitfield, James. "Delivering the Goods to the Troops," Government Executive: 54 (May 1991).
147. Knight, Clayton. Lifeline in the Sky: The Story of the Military Air Transport Service. New York: William Morrow and Company, 1957.
148. Knight, Clayton. "The Story of the US Military Air Transport Service," Lifeline in the Sky. New York: William and Morrow Company, 1957.
149. Knight, Robin. "Cautious Capitalism," US News and World Report, 109: 54-56 (November 5, 1990).
150. Knight, Robin. "Poland's Feud in the Family," US News and World Report, 109: 52-56 (September 10, 1990).
151. Knight, Robin, et al. "Taps for an Unloved East German Army," US News and World Report, 109: 48 (October 1, 1990).
152. Kohan, John. "The Killing Zone," TIME, 135: 30-33 (January 29, 1990).
153. Kohn, Richard H., and Joseph P. Harahan, editors. Air Superiority in World War II and Korea: An Interview with Gen James Ferguson, Gen Robert M. Lee, Gen William Momyer, and Lt Gen Elwood R. Quesada. Washington DC: Office of Air Force History, 1983.

154. Kreidberg, Marvin A., Lieutenant Colonel, USA, and Merton G. Henry, First Lieutenant, USA. History of Military Mobilization in the United States Army, 1775-1945. Washington DC: Government Printing Office, 1955.
155. Krout, John A. United States Since 1865. New York: Barnes and Noble Books, 1973.
156. Kyle, Deborah M. and Benjamin F. Schemmer. "New DOD Mobility Study Asks \$18-31 Billion to Beef Up Airlift, Preposition More Forces," Armed Forces Journal International, 118: 30-35 (May 1981).
157. La Farge, Oliver, Lieutenant Colonel, USAF Reserve (retired). The Eagle in the Egg. Boston: Houghton Mifflin Company, 1949.
158. Lane, Charles. "The Perils of Poland," Newsweek, 116: 40-42 (December 10, 1990).
159. Lane, John J., Major General, USA. "Does DOD Need One Single Manager for Transportation?" Armed Forces Management: 50-52 (15 March 1969).
160. Lawday, David. "Sunset for an Old Order," US News and World Report, 109: 42-46 (October 1, 1990).
161. Lenin, Vladimir I. "War and Revolution." From The Soviet Art of War. W. F. and H. F. Scott, editors. Boulder CO: Westview Press, 1982.
162. Lesser, Ian O. "The Mobility Triad - Airlift, Sealift and Prepositioning in American Strategy," Journal of the United Services Institute for Defense Studies: (March 1986). Air Command and Staff College (AU), Maxwell AFB AL, 1988.
163. Lief, Louise. "Flying in Formation," US News and World Report, 109: 42-44 (September 24, 1990).
164. Link, Arthur Stanley. Woodrow Wilson and the Progressive Era, 1910-1917. New York: Harper & Brothers Publishing, 1954.
165. Linville, Ray P., Lieutenant Colonel, USAF. "Maritime Prepositioning: A Logistics Readiness and Sustainability Enhancement," Air Force Journal of Logistics, 8: 2-7 (Winter 1984).
166. Lutes, LeRoy, Lieutenant General, USAF. "Logistics in Grand Strategy." Speech before the National War College. Washington DC, February 13, 1950.

167. Mader, William, et al. "This New House," TIME, 135: 26-28 (May 14, 1990).
168. Manuilski, Dimitry. Declaration while a professor at the Lenin School of Political Warfare in Moscow, 1930.
169. Masko, David P. "Massive Deployment Compares to WWII Airlift," Skywrighter, 32: 9 (September 28, 1990).
170. Matthews, William. "Gulf Operation Highlights Airlift, Sealift Trouble Spots," Air Force Times, 52: 24 (March 18, 1991).
171. Matthews, William. "The World According to the Top Commanders," Air Force Times, 51: 10-12 (February 26, 1990).
172. Matthews, William. "US to halve Forces in Europe as NATO Restructures," Air Force Times, 52: 14 (June 10, 1991).
173. Mayer, A. J. "The Cellular Containership," Defense Transportation Journal: 37 (July/August 1972).
174. Meyer, Michael. "Day One for a New Germany," Newsweek, 116: 45 (October 8, 1990).
175. Miles, Donna. "Sustaining the Force," Soldiers, 46: 20-23 (May 1991).
176. "Military Airlift Command," Air Force Magazine, 73: 76-80 (May 1990).
177. "Military Airlift Command," Air Force Magazine, 74: 85-88 (May 1991).
178. Military Posture, FY88. Washington DC: Government Printing Office, 1987.
179. "Military Sealift Command," Defense Transportation Journal, 38: 21-28 (February 1982).
180. "Military Sealift Command," Sealift: 6-27 (October, 1979).
181. Miller, Jay. 3rd Strategic Air Depot Association Newsletter. March 1981.
182. Millis, Walter, editor. The Forrestal Diaries. New York: Viking Press, 1951.
183. Milovidov, A. S., editor. Military-Theoretical Heritage of V. I. Lenin and Problems of Contemporary War. Moscow: Voenizdat, 1987.

184. Milovidov, A. S., and V. G. Kozlov. Philosophical Heritage of V. I. Lenin and Problems of Contemporary War. Moscow: Voenizdat, 1972.
185. Mitchell, William, Brigadier General, USA. Memoirs of World War I. New York: Random House, 1960.
186. Mitchell, William, Brigadier General, USA. Our Air Force. New York: E.P. Dutton & Company, 1919.
187. Momyer, William W. Airpower in Three Wars. Washington DC: Government Printing Office, 1978.
188. Mooney, Chase C. Organization of the Army Air Arm, 1935-1945, historical study 10. Maxwell AFB AL: USAF Historical Division, 1956.
189. Morrow, Lance. "The Unlikely Patron of Change," TIME Magazine, 135: 42-45 (January 1, 1990).
190. Moses, Glenn E., Major, USAF. Strategic Mobility, Introduction. Research project, Air Command and Staff College (AU), Maxwell AFB AL, 1988.
191. Motley, James B., Colonel, USAF. "A Perspective on Low-Intensity Conflict," Military Review, 65: 2-11 (January 1985).
192. Nalty, Bernard C. Air Power and the Fight for Khe Sanh. Washington DC: Office of Air Force History, 1973.
193. Nathan, James A., and James K. Oliver. United States Foreign Policy and World Order. Boston: Little, Brown and Company, 1976.
194. Nixon, Richard M. "American Foreign Policy: The Bush Agenda," Foreign Affairs, 68: 199-219 (Winter 1988/89).
195. Norris, John G. "Airpower in the Cold War," Air Force Magazine, 31: 25-26 (September 1948).
196. O'Hara, John A., Major, USAF. "Strategic Mobility, We Have a Long Way to Go," Defense Transportation Journal, 37: 29-30 (August, 1981).
197. "People of the Year," Newsweek, 114: 18-38+ (25 December 1989). A special report.
198. Peoples, William C., Lieutenant Colonel, USMC. Maritime Prepositioned Force: What It Is, What It Does, How It Works. Naval War College, Newport RI, 20 June 1986.

199. Peppers, Jerome G., Jr., Professor Emeritus. Class lecture notes, "History of US Military Logistics," LOGM 666, Spring Quarter. Air Force Institute of Technology (AU), Wright-Patterson AFB OH, 25 March 1991 through 7 June 1991.
200. Peppers, Jerome G., Jr. Military Logistics: A History of United States Military Logistics 1935-1985. Huntsville AL: Logistics Education Foundation Publishing, 1988.
201. Peppers, Jerome G., Jr., Professor Emeritus. "Transportation Logistics." Address to the Air Force Transportation Squadron Commanders. Air Force Institute of Technology (AU), Wright-Patterson AFB OH, 20 July 1990.
202. Pianalto, Albert G., Colonel, USAF. Conference Notes for the Bare Base 2000 Implementation Conference, 3-5 May 1989, Holloman AFB NM. HQ TAC/LGX, Langley AFB VA, 26 February 1988.
203. Pianalto, Albert G., Colonel, USAF. "Minutes: Bare Base 2000 Conference, 2-4 May 1989, Holloman AFB NM." HQ TAC/LGX, Langley AFB VA, 30 June 1989.
204. Pianalto, Albert G., Colonel, USAF. "Minutes: Bare Base 2000 Implementation Conference, 14-15 January 1988, Holloman AFB NM." HQ TAC/LGX, Langley AFB VA, 26 February 1988.
205. Pike, Douglas. War, Peace, and the Viet Cong. Cambridge: Massachusetts Institute of Technology Press, 1969.
206. Pope, Victoria. "The Authoritarian Temptation," US News and World Report, 109: 38-39 (December 10, 1990).
207. Powell, Colin L., General, USA. Chairman, Joint Chiefs of Staff. "US Military Doctrine: The Way We Were and Are," Defense 90: 16-20 (March/April 1990).
208. Powell, Stewart M. "Desert Duty," Air Force Magazine, 74: 30-35 (February 1991).
209. Program Guidance Letter on NATO Prepositioning Procurement Program. Ramstein AB Germany: HQ USAFE/LGXWS, 1 January 1987.
210. Quick, John. Dictionary of Weapons and Military Terms. New York: McGraw Hill Publishers, 1973.
211. Quirk, John T., Lieutenant Colonel, USAF. "An Analysis of Air Force Logistics Shortfalls of the Vietnam Buildup of 1965-68 as an Indicator of Shortfalls in Future Conflicts." Unpublished research report, Air War College (AU), Maxwell AFB AL, 1980.

212. Reichers, Lou. The Flying Years. New York: Henry Holt and Company, 1956.
213. Ridgway, Matthew B. The Korean War. New York: Doubleday, 1967.
214. Robbins, Carla Anne. "Is There a New World Order?" US News and World Report, 110: 50 (March 11, 1990).
215. Robinson, Maurice K., Jr., Captain, USAF. "Bare Base - A Runway, A Source of Water, and Nothing Else," Air Force Civil Engineer, 8: 18-20 (May 1967).
216. Romjue, John L. "The Evolution of the AirLand Battle Concept," The Air University Review, 36: (May/June 1984).
217. Roosevelt, Franklin D. Address written for the Jefferson Day Dinners Radio Broadcast on April 13, 1945. President Roosevelt died in Warm Springs Georgia on 12 April 1945.
218. Roosevelt, Franklin D. "Fireside Chat" on 29 December 1940. White House, Washington DC. From Roosevelt: The Soldier of Freedom. James MacGregor Burns. New York: Harcourt Brace Jovanovich, Inc., 1970.
219. Roosevelt, Franklin D. "War Message to Congress" on 8 December 1941. White House, Washington DC. From Roosevelt: The Soldier of Freedom. James MacGregor Burns. New York: Harcourt Brace Jovanovich, Inc., 1970.
220. Rutenberg, David C., Lieutenant Colonel, USAF, and Jane S. Allen, editors. The Logistics of Waging War: American Logistics 1774-1985. Maxwell AFB AL, Air Force Logistics Management Center. Undated. Issued December 1986.
221. Santayana, George. "Reasons in Common Sense," Life of Reason. Cambridge Great Britain: University Printing House, 1980.
222. Scott, Harriet F. and William F. Scott. Soviet Military Doctrine: Continuity, Formulation, and Dissemination. Boulder CO: Westview Press, 1988.
223. Scott, Harriet F. and William F. Scott, editors. The Soviet Art of War. Boulder CO: Westview Press, 1982.
224. Segal, David. "What Ever Happened to Rapid Deployment?" Armed Forces Journal: 39-40 (March 1991).
225. Sharp, U.S. Grant, Admiral, USN. Strategy in Defeat, Vietnam in Retrospect. San Rafael CA: Presidio Press, 1976.

226. Sinnreich, Richard Hart. Military Strategy in Transition, Studies in International Security Affairs and Military Strategy. Boulder CO: Westview Press, 1984.
227. Skinner, Douglas W. AirLand Battle Doctrine. A professional paper for the Center for Naval Analysis. Alexandria VA: September 1988.
228. Skirido, M. P. The People, the Army, the Commander. Moscow: Voenizdat, 1970.
229. Sokolovskiy, Vasiliy D., Marshall of the Soviet Union 1952-1960. Editor of Military Strategy, 1st ed. Moscow: Voenizdat, 1962.
230. Sorenson, David S. "Getting Back to Europe: Strategic Lift Needed Now More Than Ever," Parameters: 64-74 (January 1990).
231. Sparrow, John C. History of Personnel Demobilization in the United States Army. Washington DC: Department of the Army, Office of the Chief of Military History, 1951.
232. Spector, Ronald. Eagle Against the Sun: The American War with Japan. New York: The Free Press/MacMillan, 1985.
233. Stalin, Joseph V. "Order of the People's Commissar of Defense, 23 February 1942, No. 55." From The Soviet Art of War. W. F. and H. F. Scott, editors. Boulder CO: Westview Press, 1982.
234. Steed, Robert F., Jr., Captain, USAF. The Evolution of the Department of Defense Transportation System: Current Problems and Trends. MS Thesis, AFIT/LSSR/82S. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1982.
235. Stewart, Richard A., Major, USMC. Maritime Prepositioning Force (MPF) Operations. TACMEMO PZ 0022-1-87, OH 7-6 (June 1987).
236. Summers, Harry G., Jr., Colonel, USA (retired). "U.S. Victory in Gulf War Exorcises the Ghost of Vietnam," Air Force Times, 52: 23-26 (March 18, 1991).
237. Sushko, N. Ya. and S. A. Tyushkevich. Marxism-Leninism on War and Army, 4th ed. Moscow: Voenizdat, 1965.
238. Tabunov, N. D., and V. A. Bokarev, editors. Marxist-Leninist Philosophy and Methodological Theory and Practice. Moscow: Voenizdat, 1982.

239. Tattini, Eugene L., Major, USAF. The War Reserve Materiel Management System. A research study, Air Command and Staff College (AU), Maxwell AFB AL, 1977.
240. Tatum, Charles C., Lieutenant Colonel, USAF. TOTAL: Tactical Operations and Training at Large. Report 6080. Air War College (AU), Maxwell AFB AL, April 1976.
241. Terry, Michael R. "Formulation of Aerospace Doctrine from 1955 to 1959," Air Power History: 47-54 (Spring 1991).
242. Trask, David F. The War With Spain in 1898. New York: MacMillan Publishing Company, Inc., 1981.
243. Truman, Harry S. Years of Trial and Hope. Garden City NJ: Doubleday & Company, 1956.
244. Trzaskoma, Richard J. Statement of the MAC Deputy Chief of Staff: Plans before the Readiness Subcommittee of the House Armed Service Committee. Washington DC: Government Printing Office, 1988.
245. Tunner, William H. Over The Hump. Washington DC: Government Printing Office, 1985.
246. "USAF in Facts and Figures," Air Force Magazine, 73: 37-52 (May 1990).
247. U.S. Bureau of Mines. Net Import Reliance on Selected Nonfuel Minerals. Table, 1985.
248. U.S. Congress, House of Representatives, Committee on Merchant Marine and Fisheries, Subcommittee on Merchant Marine. Hearings on Maritime Authorization and Oversight - Part 2. Hearing, 96th Congress, 2nd Session, 1980. Washington DC: Government Printing Office, 1980.
249. U.S. Congress, House of Representatives. The Posture of Military Airlift. Washington DC: Government Printing Office, 1976.
250. U.S. General Accounting Office. Military Readiness Status of the Marine Corps Prepositioning Program in Norway. NSIAD-89-110. Gaithersburg MD: US GAO, March 1989.
251. Van Creveld, Martin. Supply War: Logistics From Wallenstein to Patton. New York: Cambridge University Press, 1977.
252. Vawter, Roderick L. Industrial Mobilization: The Relevant History. Washington DC: National Defense University Press, 1983.

253. Washington, George. President of the United States, 1789-1797. "First Annual Address." Inaugural address before both Houses of Congress, Federal Hall, New York City, 8 January 1790.
254. Weaver, Kenneth M., Captain, USAF. An Historical Analysis of the Air Force's Bare Base Concept and Equipment. MS Thesis, AFIT/GEM/LSR/89S-18. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1989.
255. Wehner, Clement E., Lieutenant Colonel, USAF. "POMCUS: Airlift's Mobility Partner," Airlift, 8: 14-18, (Spring 1986).
256. Weinberger, Casper W. Annual Report to the Congress. Washington DC: Government Printing Office, 1984.
257. Weinberger, Casper W. Annual Report to the Congress. Washington DC: Government Printing Office, 1987.
258. Wendzell, Dr Robert L., and Colonel James L. True, Jr. "Selective Involvement and Strategic Mobility Changing Strategy, Changing Emphasis," Air University Review, 37: (May-June 1986). Air Command and Staff College (AU), Maxwell AFB AL, 1988.
259. White, Eston T. National Security Management Transportation. Industrial College of the Armed Forces, Washington DC, March 1974.
260. White, Thomas D. "Air and Space are Indivisible," Air Force Magazine, 41: 40-41 (March 1958).
261. Whitmore, Jane, et al. "Into a Brave New World," Newsweek, 114: 40-44 (December 1989).
262. Windham, Clifton T., Lieutenant Colonel, USAF, and Joseph H. Smith. "A New Frontier," Air Force Engineering and Services Quarterly, 24: 24-26 (Winter 1983). AFRP 85-1. Washington DC: Government Printing Office, 1983.
263. Wood, C. N., Major General, USA. "Alliance and Defense Capabilities in Europe." Testimony before the Subcommittee on Conventional Forces and Alliance Defense of the Committee of Armed Services. 100th Congress, 1st session. Washington DC: Government Printing Office, 1988.
264. "World Leaders Praise Gorbachev's Nobel," Daily Dayton News, 114: 1A-4A+ Dayton OH (16 October 1990).

265. "World's Greatest Airline, The," Fortune, 32: 158-213 (1945).
266. Wu, Sun Tzu. The Art of War. Harrisburg PA: The Military Service Publishing Company, 1957.
267. Yalowitz, Gerson. "It's Walesa vs. the Prime Minister," US News and World Report, 109: 52 (July 16, 1990).
268. Young, Susan H. H. "Gallery of USAF Weapons," The Air Force Magazine, 73: 141-160 (May 1990).
269. Zheltov, A. S. V. I. Lenin and the Soviet Armed Forces, 3rd ed. Moscow: Voenizdat, 1980.
270. Zhilin, P. A., editor. History of Military Art. Moscow: Voenizdat, 1986.

Vita

Captain Jack E. King, Jr. was born on 12 January 1961 in Knoxville, Tennessee. He graduated from high school in Gastonia, North Carolina, in 1979. After attending three years at Appalachian State University, he enlisted in the USAF in July 1982, beginning his USAF career as a Materiel Handling Specialist at the 437th Military Airlift Wing, Charleston AFB, South Carolina. While on active duty, Captain King earned an Associates Degree in Logistics Management from the Community College of the Air Force in 1986. He graduated from The Citadel in May 1986 earning a baccalaureate degree in Mathematics. Captain King was accepted to Officers Training School in March 1987. Upon graduation, he was assigned to the Logistics Plans Division of the 7th Bombardment Wing, Carswell AFB, Texas. He was selected to attend the School of Systems and Logistics, Air Force Institute of Technology, at Wright-Patterson AFB, Ohio in April 1990. Captain King is married to the former Linda Mauree King of San Antonio, Texas.

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13. ABSTRACT (Maximum 200 words) This study analyzed the effects of perestroika on the decisions and strategies USAF planners must employ regarding the future disposition of War Reserve Materiel. This study is intended to lay the foundation for further study in the wider realm of DOD materiel reserves--a foundation upon which others are expected to improve. This study puts WRM into perspective. Budgetary constraints and increased commitments abroad, with particular emphasis on Third World nations, continues to influence prepositioning's significance as a component of the strategic mobility triad. An historical analysis of US military logistics is followed by a detailed synopsis of US and Soviet military doctrine. In turn, an overview of current events taking shape around the world supports the necessity for US defense planners to make reasonable and expedient decisions regarding the future of the strategic mobility triad. Considerable attention is devoted to a detailed analysis of USAF WRM, focusing on several options regarding the future strategic placement of critical WRM stockpiles, given the "epidemic of democracy" racing throughout the world today. This study employs the historical research method with no attempt to derive a single, "optimum" solution but, more importantly, to serve as an educational tool for those who must.				
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