Version 1.0

A
WHITE PAPER
For

STRATEGIC DEPLOYMENT

10 May 2000

U.S. Joint Forces Command J9
Concepts Division (J-92)

Preface

This publication is Version 1.0 of the U.S. Joint Forces Command's ***Strategic Deployment (SD)*** White Paper. SD is a "functional" concept written within the operational context of the ***Rapid Decisive Operations (RDO)*** "integrating" concept.

This paper expands the Version 0.5 White Paper and continues to build on the overarching baseline concepts articulated in ***Joint Vision 2010 (JV 2010), Concept for Future Joint Operations,*** and the ***Focused Logistics Roadmap.*** SD addresses appropriate ***JV 2010 21st Century Challenges*** and Focused Logistics Desired Operational Capabilities (DOCs). This paper also fulfills the concept development requirements described in the December 1998 CJCSI 3010.02 (*Joint Vision Implementation Master Plan*) and in the April 1999 *Defense Planning Guidance*.

This paper focuses on the operational level of war and describes the enhanced integrated and fused Automated Information System (AIS), transportation, and other requirements that enable the Joint Force Commander to conduct RDO. In the 21st Century, the US and its allies will depend on their ability to provide immediate military presence to counter adversarial threats and conduct combat operations, show of force, peacekeeping, nation building, humanitarian assistance, disaster relief, and other missions across the range of military operations. The requirement for projecting credible military forces and sustainment to all corners of the globe necessitates an agile and responsive deployment capability.

This Version 1.0 White Paper will present potential enhancements to the deployment system that will be examined in a series of joint experimentation events in and beyond FY 00 in coordination with the Joint Deployment Process Owner (JDPO). The results of these experiments will be used to refine or refocus future versions of the White Paper as required.

Points of Contact

Questions or comments related to SD experimentation should be directed to Ms. Lauran Winter, Integrated Concept Team (ICT) Chairperson, J98, (757) 836-2847, DSN 836-2847, **winterl@jfcom.mil**. Questions or comments related to the content of this paper should be directed to Mr. Dale Herron, J92, (757) 836-2246, DSN 836-2246, **herron@jfcom.mil**.

// SIGNED//

TIMOTHY A. PEPPE
Major General, U.S. Air Force
Director, Joint Experimentation

A White Paper for

Strategic Deployment

Executive Summary

The relevance of joint forces in the 21st Century will depend greatly on their ability to rapidly deploy from various and diverse continental United States (CONUS) and forward presence locations to positions of operational advantage in or near the joint operations area (JOA)? and arrive ready to immediately conduct RDO. Unlike operation Desert Storm, joint forces will no longer have the advantage of months to deploy from peacetime locations to the JOA. As potential adversaries acquire modernized weapon systems and gain more speed and agility, our response time must be in hours and days? not weeks and months? to preclude the adversary from implementing exclusionary strategies and "setting" his forces. There is a general recognition of the need to accelerate the early arrival of forces to effectively influence the early phase of operations, decrease the risk to US and coalition forces, and influence the earliest resolution of RDO. Speeding up the flow of forces will require changes to the way the joint deployment community currently conducts business.

In the 21st Century, the U.S. and its allies will depend on their ability to provide immediate military presence to counter threats and provide regional stability. The requirement for projecting credible military capability to all corners of the globe necessitates an agile and responsive strategic deployment capability. Through the advantages provided by a worldwide information architecture, integrated joint theater logistics management, and responsive strategic lift, the JFC can be assured that force deployment to positions within operational reach will be agile, precise, and synchronized. Response times will likely be very short and the deployment of military capability must be tailorable and swift. The joint force must be capable of marrying deploying forces with pre-positioned equipment at designated staging locations forming immediate and viable presence combat power.

The Result: Strategic positioning of sufficient capability to ensure rapid decisive operations.

The current joint deployment system consists of a combination of joint and Service-unique "stovepiped" automated information systems that do not function in an integrated, seamless, fused, and cohesive manner. This has resulted in a disjointed approach to deploying forces. Although strategic deployment operations have been successful in the past, it was principally because of the Herculean efforts of personnel "hand massaging" the system. To correct this situation, the Joint Force Commander (JFC) needs a deliberate and crisis deployment planning system that is collaborative, flexible, interoperable, seamless, fused, and responsive to user requirements and that contains information that is accurate, current, and displayed as a common relevant operational picture (CROP).

- First, the JFC needs a Joint Force Catalog listing a force description and capability that can be used during a collaborative session to select forces during Course of Action (COA) development.

- Second, the JFC needs a database that links the force capability selected in the Force Catalog to a database that maintains actual data on units available to deploy. The JFC also needs improved, integrated, and fused AISs and processes to plan, coordinate, manage, and track the movement of units, personnel, equipment, and sustainment from point of origin through joint reception, staging, onward movement, and integration (JRSOI) activities (if required) in or near the JOA.

- From a transportation deployment platform perspective, some current airlift platforms require modernization and modification to improve mission capable rates and reduce vulnerability to adversary weapon systems, and a decision must be made regarding the correct mix of inter-theater and intra-theater assets. Additionally, emerging and notional future inter-theater and intra-theater airlift platforms should be examined with a view toward replacing current platforms that are approaching the end of their service lives. High-speed sealift platforms should be explored to more rapidly project combat forces into the JOA whose transportation characteristics make them unsuitable for deployment by air.

Future strategic deployment operations will be conducted in essentially the same manner as they are today. **What will be different** is how much faster and more thoroughly RDO operations can be collaboratively planned and executed in a fused and integrated AIS environment, and how rapidly combat power can be projected to the battlespace using improved and evolutionary sea and air platforms? faster SD means less risk and faster conflict resolution. It will be the synergism resulting from the AIS and transportation platform enhancements that, collectively, will speed up SD operations.

Table of Contents

(INTENTIONALLY BLANK)

Chapter One
Operational Context

1.0 Purpose

Joint Publication 3-35, Joint Deployment and Redeployment Operations, defines force projection as:

> ***"The ability to project the military element of national power from the continental United States (CONUS) or another theater, in response to requirements for military operations. Force projection operations extend from mobilization and deployment of forces to redeployment to CONUS or home theater."***

A major component of force projection operations is strategic deployment. The SD concept is a mid-term (2010–2015) functional concept focusing on the implementation of *JV 2010* and will assist in achieving Full Spectrum Dominance, the key characteristic we seek for our armed forces in the 21st century. The concept addresses the SD aspects of force projection. SD is an essential component of many joint and Service warfighting concepts because of the need to deploy forces and provide initial sustainment to the JOA. The concept will also address near-term developments that can provide early solutions and document those far-term evolving ideas still in varying stages of development. The objective of this concept is to describe a significantly improved SD capability for deploying joint forces by sea, air, and land, along with initial sustainment, over strategic distances, transitioning rapidly from deployment to a mission-capable posture, and supporting rapid strategic and operational maneuver. Part of this objective entails the initial positioning of forces and accompanying sustainment to enable the conduct of Attack Operations Against Critical Mobile Targets (AOACMT) and RDO. Once deployed, AOACMT will conduct operations to destroy or neutralize critical mobile air, surface and space targets, particularly those that can deliver weapons of mass effects (WME) and thereby provide protection for critical force projection operations.[1] RDO will focus on applying joint combat power, principally at the operational level, to achieve objectives in a small-scale contingency environment such as recent operations in Serbia.[2] To conduct RDO the JFC requires:

> "…power projection, enabled by overseas presence, will likely remain the fundamental strategic concept of our future force."
>
> Joint Vision 2010

[1] Attack Operations Against Critical Mobile Targets, U.S. Joint Forces Command, 30 August 1999.
[2] A Concept Framework for Rapid Decisive Operations, U.S. Joint Forces Command, 22 October 1999.

- A deliberate and crisis deployment planning system that is collaborative, flexible, interoperable, seamless, and responsive to user requirements that contains information that is accurate, current, relevant to the user, and fused into a CROP.

- Integrated "best business" practices, technology, and information systems that enhance the JFC's ability to conduct Crisis Action Planning (CAP), develop a transportation feasible course of action, build combat power, and maintain visibility of and track, units, personnel, equipment, and sustainment from predeployment activities at point of origin through JRSOI activities in or near the JOA, when JRSOI activities are required.

- A rapid and agile ability to project combat power and sustainment, facilitate rapid force closure, and integrate with forces in the JOA to support RDO missions across the range of military operations.

- Enhanced air and sea transportation technology and equipment capable of providing access to undeveloped areas where air and seaports are unavailable, inadequate, degraded, or denied.

Achieving these objectives will enable the JFC to conduct RDO- without these features RDO is unsupportable.

The Chairman of the Joint Chiefs of Staff clearly stated the overarching goal for the Focused Logistics transportation tenet with his challenge, "We must be the world's premier deployer." The key to operational success is our ability to rapidly move our combat power to a supported Commander in Chief's (CINC) theater, ready for mission execution. Not surprisingly, the 1999 Defense Planning Guidance (DPG) identified improved strategic deployment as one of the areas that the joint experimentation process should investigate. Strategic deployment—at the heart of force projection operations—is essential to both the RDO and AOACMT operational concepts. As articulated in the Focused Logistics Roadmap, strategic deployment involves:

"We must be the world's premier deployer."

Chairman, Joint Chiefs of Staff
Focused Logistics Roadmap

> **"…the process of moving multi-service forces to an operational area coupled with the accelerated delivery of logistics resources through improved transportation and information networks providing the warfighter with vastly improved visibility and accessibility of assets from source of supply to point of need."**

As used herein strategic deployment is defined as:

> ***The movement of forces and their initial sustainment from their point of origin to a specific operational area to conduct joint operations outlined in a given plan or order.***

Deployment operations involve four phases: predeployment activities; movement to and activities at the port of embarkation (POE); movement to the port of debarkation (POD); and joint reception, staging, onward movement, and integration (JRSOI) activities.[3] **The primary objective of deployment is to provide personnel, equipment, and sustainment when and where the JFC requires it to support his concept of operations.** Deployment is an operational imperative enabled by logistics and conducted in a collaborative environment between the operators (J3s) and logistics enablers (J4s).

The US Air Force, US Navy and US Marines self-deploy using organic transportation lift assets. The US Army is the principal user of common-user transportation lift assets to deploy. Since the cold war ended, Army deployments have increased by more than 300 percent. Between World War II and the fall of the Berlin Wall, the Army conducted 10 major deployments. Since then, it has conducted 33 major deployments.[4] During operations Desert Shield and Desert Storm, the US and coalition forces were successful because the adversary allowed us time to deploy, receive, integrate, and position our forces and an build "iron mountain" of sustainment in preparation for combat operations. It is unlikely that any future adversary will allow us this advantage. Today, the large force structure of personnel, equipment, and materiel that enabled our combat success is no longer available. The drawdown of forces has had an adverse impact on combat and logistics support force structure and capability in a manner similar to other post-war periods—World War I, World War II, Korea, Vietnam, etc.

The primary purpose of our armed forces is to fight and win our nation's wars. However, since the success of Desert Storm, warfighters have been required to respond rapidly and effectively, on short notice, to a broad range of uncertain situations. Threat situations have included conventional forces, terrorist and paramilitary groups, and the possibility of weapons of mass destruction (WMD) ranging from the very sophisticated to the very crude. The locations of these contingencies have often been in areas where US forces have not operated before, and which contain mature, and less-than-mature infrastructure. Additionally, the overseas presence of US forces has been significantly reduced, resulting in the US no longer being able to project combat power in the same strength and reducing the combat power that the US can project from these forward based, strategic locations. This has resulted in a loss of strategic agility. It has necessitated a greater need for interoperability among the US Services and allied/coalition forces, and the need to share resources has greatly increased. Additionally, the increased role of interagency

[3] Joint Publication 3-35, Joint Deployment and Redeployment Operations, 7 September 1999.
[4] Katherine McIntire Peters, "Losing Ground," Government Executive (August 1999).

and non-governmental partners in US military operations has created a new dimension to the logistics challenge.

All strategic deployment operations using common-user transportation lift assets (i.e., non-self deploying units) use the resources of the Defense Transportation System (DTS). The new initiatives described in this paper will directly impact how rapidly, efficiently, and effectively the DTS can project combat power to positions of strategic and operational advantage to the JFC. Therefore, it is important to have an understanding of how the DTS is organized and how it enables the JFC to position forces to conduct RDO and AOACMT.

Currently, deployments are conducted under the purview of the DTS. The United States Transportation Command (USTRANSCOM) is the Department of Defense (DoD) single manager for common-user sea, land, and air transportation and is the manager of the DTS. The DTS is that portion of the worldwide transportation infrastructure, that supports the DoD transportation needs and projects decisive combat power for all operations across the range of military operations. The system consists of military and commercial transportation sea and airlift assets, services, and systems belonging to, contracted for, or controlled by DoD. USTRANSCOM provides transportation and common-user port management for DoD through its transportation component commands (TCCs); Air Mobility Command (AMC); Military Sealift Command (MSC) and Military Traffic Management Command (MTMC).[5] For more detailed information on how the DTS functions, refer to "Understanding the Defense Transportation System", USTRANSCOM Handbook 24-2.

During peacetime and contingency operations, the supported CINC, using the Joint Operation Planning and Execution System (JOPES) to support deliberate and crisis action planning, develops operations plans (OPLANs), concept plans (CONPLANs), and functional plans to support military contingencies in his AOR. The plan may or may not include the Time-Phased Force and Deployment Data (TPFDD), containing time-phased force data, non-unit-related cargo and personnel data, and movement data for the plan. During execution of the plan the TPFDD provides a prioritized listing of forces that is verified by supporting commands and then validated by the supported commander to USTRANSCOM for scheduling and allocation of transportation for movement. The fusing together and integration of the AISs and processes discussed in this concept will enable the DTS to be more responsive to the CINC's needs to assemble his combat force. USTRANSCOM executes its movement mission through its TCCs, each of which is responsible for the function described below.

AMC's mission: "The Air Mobility Team…Responsive Global Reach for America…Every Day!"

USTRANSCOM Handbook 24-2

Air Mobility Command (AMC): Using personnel from the active and reserve

[5] Understanding the Defense Transportation System, USTRANSCOM Handbook 24-2.

components and commercial partners**,** AMC provides common-user and exclusive-use airlift and aeromedical evacuation transportation services for deploying, employing, sustaining, and redeploying joint forces wherever they are needed worldwide. AMC is the worldwide aerial port manager and, where designated, operator of common user aerial ports of embarkation (APOEs) and/or aerial ports of debarkation (APODs). AMC is the single point of contact within the commercial airline industry for procurement of DoD domestic and international airlift services and administers and executes the Civil Reserve Air Fleet (CRAF). CRAF is composed of commercial air resources committed to support the movement of military forces and materiel worldwide. Aircraft from participating commercial carriers contribute about one third of USTRANSCOM's wartime airlift capability. CRAF cargo aircraft are capable of moving all bulk and some oversized cargo, but, because of structural limitations, they cannot carry outsized cargo such as main battle tanks. During operation Desert Storm, 64 percent of the passengers and 27 percent of the cargo were deployed to the theater by CRAF assets.

MSC's mission: "Meet DoD requirements by providing efficient sea transportation, combat ready logistics forces, and reliable special mission ships in a seamless transition from peace to war."

USTRANSCOM Handbook 24-2

Military Sealift Command (MSC): MSC provides common-user and exclusive-use sealift transportation services to deploy, employ, sustain, and redeploy US forces worldwide between seaports of embarkation (SPOEs) and seaports of debarkation (SPODs). MSC provides sealift with a fleet of government owned and chartered US flag ships and through contracts with commercial ocean carriers. MSC executes the Voluntary Intermodal Sealift Agreement (VISA) contracts for chartered vessels. VISA is a sealift mobilization program developed to provide contractually committed, time-phased US flag commercial sealift capability to meet DoD contingencies. The worldwide intermodal system provided by these commercial carriers provides extensive and flexible capabilities to DoD. Ninety percent of the US flag dry cargo fleet is enrolled in VISA.

MTMC's mission: "support the DoD Components and the mobilization community worldwide during peace and war with proactive planning, immediate response to crises, and 21st Century Technologies. Provide excellence in traffic management, terminal operations, Information Management, and Transportation Engineering."

USTRANSCON Handbook 24-2

Military Traffic Management Command (MTMC): MTMC provides worldwide common-user ocean terminal and traffic

management services to deploy, employ, sustain, and redeploy US forces. MTMC also conducts transportation engineering to ensure deployability and feasibility of present and future military systems, serves as the single port manager to the geographic CINCs, and develops integrated traffic management systems. MTMC executes VISA contracts for commercial liner service and administers the contingency response program (CORE). CORE is a voluntary program between DoD and commercial carriers that gives priority for the acquisition of domestic civil transportation resources prior to, and during, military mobilization and deployments.

1.1 Scope

As the Joint Deployment Process Owner (JDPO), the Commander in Chief, U.S. Joint Forces Command is involved with SD from predeployment activities through JRSOI. Accordingly, the JDPO will continue to be the focal point and remain actively engaged in the end-to-end process of joint/strategic deployment. With a view towards *JV 2010,* the JDPO will recommend the leveraging of new technologies as they become available and, in coordination with J9, the Joint Battle Center (JBC), and the Service laboratories, ensure new concepts, emerging technologies, and state-of-the-art equipment are integrated with the joint deployment process. The SD concept and its related joint experimentation are extensive in scope. It entails the analysis of joint and Service deployment systems, functions, processes and procedures; the identification of the information and transportation technologies required to enhance the system; and the testing of the enhancements.

This concept will describe the SD process in the context of the improved, integrated, and fused AISs and processes required by the JFC and system users to collaboratively plan, coordinate, and track the movement of joint forces and sustainment. It will describe the JFC's need and potential solutions for a single end-to-end capability to manage and monitor units, personnel, equipment, and sustainment from point of origin through JRSOI in or near the JOA. The concept will also describe evolving and future transportation technology and equipment improvements for enhanced Joint Logistics Over the Shore (JLOTS), sealift, and airlift capabilities. In this process, the concept will address the four phases of deployment operations: predeployment activities, movement to and activities at the POE, movement to the POD, and JRSOI activities. The SD concept focuses on the operational level of war as envisioned by the AOACMT and RDO concepts in the mid-term timeframe (2010-2015). It is concerned with evolutionary as well as potential revolutionary improvements to the deployment system, and focuses on resolving near-to long-term deficiencies identified by the unified commanders and Services. Strategic deployment is an essential component of many of the joint and Service warfighting concepts because of the need to deploy forces and sustainment to the JOA.

1.2 Future Challenges

The military, political, economic, and social environment in which SD operations are conducted is dynamic, rapidly changing, and uncertain. Future SD operations will be based on a continuing reduced forward presence and dependence on enroute

infrastructure. As events in the recent past have shown, in addition to combat operations, future deployments will continue to be conducted in support of peacekeeping, disaster assistance, humanitarian assistance, and other Military Operations Other Than War (MOOTW). Given the urgent nature of these missions, there will be a need to deploy a significant military capability, including ground forces, in days—not weeks. To support these operations, future deployments will require enhanced and versatile sealift and airlift assets capable of faster speed, greater lift capacity, and longer range. An additional requirement is the ability to deliver materiel ashore in less-than-ideal conditions (i.e., high sea states and inadequate port facilities). To manage these limited resources the JFC needs near-real-time logistics situational awareness and knowledge of where assets are located and their availability. Because of the heavy reliance on AISs to plan, execute, manage, and monitor SD operations, the systems will be susceptible to information attacks to disrupt operations and corrupt the data. Due to the increasing threat of terrorist attacks and the use of chemical and biological warfare (CBW) and WMD, airlift takeoff and landing points, prepositioning (PREPO) and JLOTS sites, seaports, and other transportation and logistical nodes will require additional force protection. Perhaps the biggest future challenge is to develop the JFC's and other users and beneficiaries of the systems trust and confidence in the SD system. The challenge is to develop a SD process, procedures, and supporting integrated and fused AISs that are responsive to their needs—a system they can trust to fulfill their requirements.

Chapter Two
The Operational Concept

2.0 Introduction

In the mid-term (2010–2015), strategic deployment operations will be conducted in essentially the same manner as they are today. **What will be different is how much faster and more thoroughly RDO operations can be collaboratively planned and executed in a fused and integrated AIS environment, and how rapidly combat power can be projected to the battlespace using improved and evolutionary sea and air platforms? faster SD means less risk and faster conflict resolution. It will be the synergism resulting from the AIS and transportation platform enhancements that, collectively, will speed up SD operations.** To achieve this end, improve strategic agility, and deploy the right mix of decisive forces to conduct RDO, the JFC requires the capability to rapidly build combat power in a JOA that may often be in undeveloped areas with limited infrastructure and unfavorable conditions. To rapidly project this combat power, the characteristics of the future force and the environment in which it operates must change.

2.1 Hypothesis

The quad chart below provides context to the concept's hypothesis and guides the development of the concept and the experimentation strategy to validate it.

21st Century Environment

- **The ability and circumstances for regional aggressors to impose their will on their neighbors will continue to expand in the 21st century. Since the US could continue to lose basing rights in or near such regions, power projection will become ever more important as a fundamental strategic concept for future joint operations.**

JV 2010's 21st Century Challenges

- **Rapid Joint Force Projection, Joint Deployment & Rapid Distribution**

Hypothesis

IF we can combine fused information, highly capable strategic lift, forward-basing alternatives, and mobile pre-positioned assets,

THEN we will increase strategic agility, limit escalation, and conduct decisive operations more quickly.

Desired Capabilities

- **Advanced planning and decision-support tools**
- **Common relevant operational picture**
- **Tailored forces and logistics**
- **Alternatives to bases and fixed ports in the JOA**
- **Heavy and supersonic inter-theater airlift airlift; fast inter-theater sealift**
- **. Intra-theater STOL**
- **Non-traditional use of vessels and pre-positioned craft as operating platforms**
- **Optimized use of pre-positioned assets**

Objectives

- **Project a joint force over strategic distances**
- **Transition rapidly from deployment to combat**
- **Support rapid force intra-theater maneuver**

Enabling

- **Dominant Maneuver, Precision Engagement, Focused Logistics**

2.2 The Strategic Deployment Concept

To maximize the use of transportation lift assets, future vehicles and other equipment must be designed to be lighter, more fuel efficient, and more conducive to being loaded on sea and air lift assets (e.g., folding rotor blades on helicopters to eliminate the need to disassemble prior to loading on sealift assets). Precision guided missiles (PGMs), other munitions, and weapon systems must be further refined for greater reliability, improved targeting and accuracy, and lethality to reduce the amount of ammunition required to be deployed. Approximately 90 percent of the Army's daily sustainment tonnage requirement is for fuel and ammunition.[6] As an example of what can be done to reduce lift requirements, Oak Ridge National Laboratory (ORNL) is working on a project to reduce the weight and size of battlefield power generators by up to 50 percent, reduce fuel consumption by 25 to 50 percent, and reduce the number of fielded models from ten to three. ORNL is also working on projects to use composite materials (e.g., carbon fiber) to reduce the weight of vehicles, and other projects to reduce vehicle fuel consumption and improve reliability. **When implemented, innovations such as these will result in a lighter force and reduced lift requirements.** Combat and support vehicles must be built with a common chassis and greater reliability to reduce the number of different spare parts required to be transported and stored for maintenance. The military must strengthen its partnership with the commercial airline industry to ensure national defense features are incorporated when designing aircraft (e.g., wide rear ramp versus side loading doors and strengthened rear ramps and cargo floors to accommodate heavier equipment). New and innovative inter- and intra-theater airlift and sealift assets, built with new light weight materials making them capable of faster speed, greater lift capacity, and longer range must be developed. Existing transportation assets must be employed in new and innovative ways. Additionally, new JLOTS capabilities must be developed capable of providing access to undeveloped areas where seaports are unavailable, inadequate, degraded or denied.

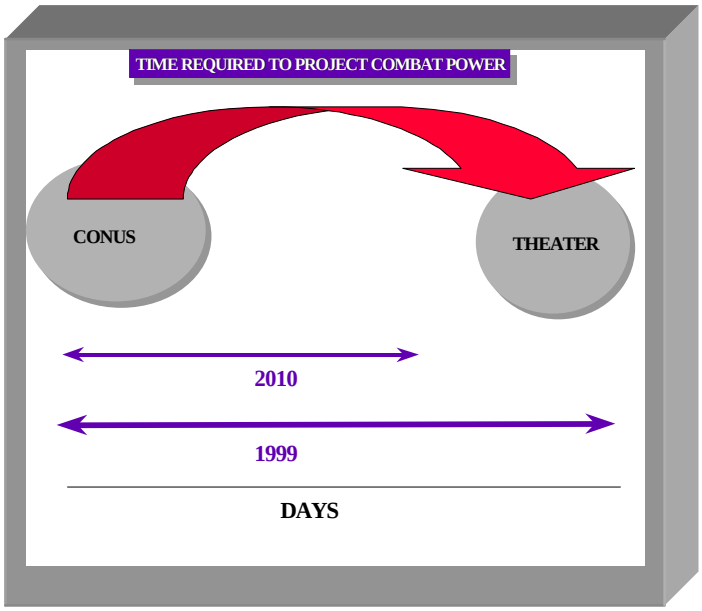
> "In sum, by 2010 we should be able to enhance the capabilities of our forces through technology."
>
> Joint Vision 2010

In addition to the changed basic characteristics of the force as described above, the JFC needs a collaborative deliberate and crisis deployment planning system that is flexible, interoperable, seamless, fused, responsive to user requirements, and contains information that is accurate, current, and displayed as a CROP. He also needs improved, integrated, and fused AISs and processes to plan, coordinate, manage and track the movement of units, personnel, equipment, and sustainment from point of origin through JRSOI in or near the JOA. Information fusion will be achieved by the ongoing and evolving programs to improve planning and decision support tools; provide total asset visibility of personnel and sustainment during SD; create new overarching, seamless logistics AISs; and integrate and fuse existing logistics and command and control systems—all displayed in a CROP. Once these and the other

[6] Lighten the Force-Technology and Army Materiel Development Planning, Association of the United States Army, Land Power Essay Series, circa November 1997.

improvements described in this concept have been completed, **the time required to project combat power will significantly decrease as indicated in the graphic.**

To provide a framework for analysis, this concept will be presented within the context of the four phases of deployment operations (although conceptually it is expected the **four phases** will function in a "seamless" manner): **predeployment activities; movement to and activities at the POE; movement to the POD; and JRSOI activities.** Although historically the joint deployment community has focused improvement efforts on the individual phases, DoD is now directing its efforts toward optimizing the entire end-to-end process.



2.2.1 Phase I - Predeployment Activities

Deliberate and crisis action predeployment planning and execution activities must be conducted in a collaborative environment using the most current decision support tools available. How thorough and comprehensive predeployment activities are conducted will have a significant impact on the success of the deployment operation. Predeployment activities are conducted at post, base, camp or station, or other points of origin from within the CONUS or Outside the Continental United States (OCONUS) (i.e., strategic deployment operations will not always be initiated from within the US). Depending upon the mission requiring the deployment, units may deploy directly from field training sites, forward-presence locations, or various locations other than their "home station." Predeployment activities include the planning and preparation of personnel, units, and materiel for deployment ensuring that the predeployment standards established by the supported CINC for the mission are met and that the forces arrive in the AOR mission-capable. During predeployment, the readiness and deployment status of units must be known to maximize the deployment flow and allow the supported CINC the ability to project combat power into the JOA as rapidly as possible. Therefore, it is imperative that predeployment activities be coordinated among the supported CINCs responsible for mission accomplishment, the Services, and the supporting CINCs providing the force packages for the operation. Joint forces must be tailored to ensure the proper balance between combat and logistics support forces, maximize the transportation lift assets allocated, and minimize the footprint of logistics forces in the AOR. Commanders organize their units (e.g., advance party, main body, rear party), for deployment based upon operational considerations such as

the nature of the mission, the threat to be encountered upon arrival, movement schedules, and the type and quantity of lift assets allocated for the movement.

During predeployment activities, OPLANs and TPFDD are developed and refined as required. The importance of having accurate and complete TPFDD and transportation movement documentation cannot be overemphasized. AISs are not a panacea. They are only as good as the information they contain. There is a direct relationship between the accuracy and completeness of the data input into the AIS, and the quality and usefulness of the information output. Inaccurate or incomplete information may cause shipments to become lost or misdirected in the DTS, or the contents of shipping containers to be unidentifiable. As the Secretary of Defense stated in his Report to Congress: Kosovo/Operation Allied Force After-Action Report: "Additional emphasis is required to ensure all participants follow the established deployment data development procedures and policies in a disciplined manner. Failure to follow proper procedures can result in conflicts and other delays as the system tries to incorporate inadequate or incomplete movement requests into the deployment data."[7] Information accuracy is also important because DoD has adopted a strategy of capturing information once and making it readily available to all users. There are several AISs under enhancement or development to integrate and fuse the SD process, and enable the rapid projection of combat power when and where the JFC needs them to conduct RDO. **It is important to note that all of these systems are discussed in the predeployment phase (where much of the data is input into the AISs or verified) because the systems are intended to function in a seamless, integrated, and fused manner (e.g., *information put into the system once)***. While some of these systems are used only during the predeployment phase, most are used during all four phases of deployment operations and will be discussed during each phase as appropriate. The following is a brief summary of the AISs under enhancement or development that will enable strategic deployment operations.

INFORMATION FUSION

…the timely and accurate access and integration of logistics data across units and combat support agencies throughout the world providing reliable asset visibility and access to logistics resources in support of the warfighter.

Focused Logistics Roadmap

Transportation Coordinator's Automated Information for Movement System (TC-AIMS II): When completed, TC-AIMS II will be the standard installation-level unit deployment and sustainment system for all Services.[8] It will be used by the Installation

[7] Report to Congress: Kosovo/Operation Allied Force After-Action Report, Office of the Secretary of Defense, January 31, 2000.
[8] TC-AIMS II Operational Requirements Document, Joint Program Management Office, July 1999.

Transportation Officer/Traffic Management Office (ITO/TMO); DoD unit movement personnel at battalion and separate company level; and unit, installation, and depot level supply systems of each Service and other agencies to automate the processes of planning, coordinating, and controlling deployment, redeployment, sustainment, and JRSOI activities worldwide during SD operations. TC-AIMS II will facilitate the movement of personnel, equipment, and supplies and provide Joint Total Asset Visibility (JTAV) during force SD operations from point of origin to point of need. It will organize unit deployment list data into aircraft, ship, rail, truck, and container load planning data, such as air cargo chalks or ship team assignments. For rail and truck movements, it will be the automated tool to assist load planners in developing actual load plans. TC-AIMS II will be the single source data system for the Joint Force Requirements Generator II (JFRG II), which will in turn be the sole TPFDD feeder system to the JOPES modules in the Global Command and Control System (GCCS). TC-AIMS II will have the capability to receive input from peripheral AIT devices capable of reading from various AIT media.

Automatic Identification Technology (AIT): Although various types of AIT have been used within DoD for several years, action is now underway to integrate existing and new technologies to support future logistics operations and enhance JTAV. The thrust of this initiative is to improve in-transit visibility of resources during deployment, redeployment, sustainment, and retrograde activities. AIT is not an AIS itself, but, rather, it is an enabling technology consisting of a suite of tools that facilitates data collection, aggregation, and transmission to AISs (e.g., TC-AIMS II). The use of AIT supports the DoD strategy of ***capturing information <u>once</u> and making it readily available to all users***. AIT encompasses a variety of read-and-write data storage technologies that can be used to capture asset identification information. It also includes the use of satellites to track and redirect shipments. The information on each device can range from a single part number to a self-contained database. The devices can be "interrogated" using a variety of means, including contact, laser, or radio frequency (RF), with the information obtained from these interrogations provided electronically to AISs that support DoD's logistics systems. There are several RF systems for AIT with various unique antenna configurations, and all are operating on different frequencies. A multi-RF antenna capable of capturing several frequencies would result in one configuration of antenna to capture data from numerous and various RF systems. This system should be compatible for use by all Services. Installations will validate data on RF tags, interrogate RF tags on departing consolidated shipments and unit equipment, and provide the data to TC-AIMS II, which, as noted above, will be the joint single source data system for the JFRG II system. JFRG II will be the joint single source TPFDD feeder system to JOPES.

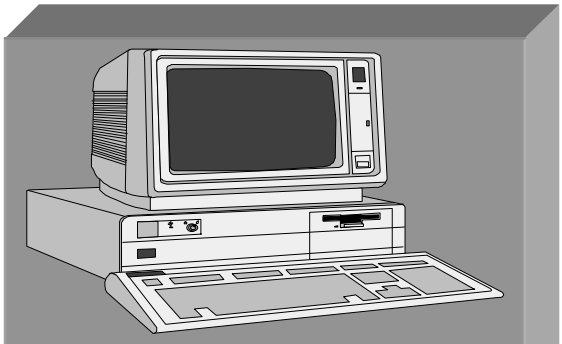
> "…AIT supports the goals of *Joint Vision 2010*….to leverage technological opportunities to achieve new levels of warfighting effectiveness."
>
> Logistics Automatic Identification Technology Concept of Operations

Joint Force Requirements Generator II (JFRG II): Like TC-AIMS II, JFRG II is still under development. JFRG II is an automated personal computer-based planning tool

designed specifically to support deliberate and crisis action planning. It operates in a stand-alone configuration on a standard International Business Machine (IBM) compatible personal computer. It supports tactical and administrative planning by providing the capability to create rapid force lists and conduct sustainment development and transportation lift analysis.[9] **JFRG II speeds up planning response time** because of its accessibility to extensive reference files and code tables. It will be equally applicable to both deliberate and crisis action planning and deployment and redeployment operations. JFRG II can import JOPES TPFDDs for analysis and refinement. It accelerates the development, sourcing, analysis, and refinement of OPLANs resulting in an executable TPFDD for transfer into the JOPES application of the GCCS.

Global Command and Control System (GCCS): GCCS is a comprehensive automated, command, control, communications, computers, and intelligence (C4I) system designed to improve the JFC's ability to manage and execute SD operations and conduct RDO.[10] It is the primary means of command and control (C^2) for the National Command Authorities (NCA) over all military forces. GCCS interoperates with Service and agency C4I systems providing a global network of military and commercial communications systems that can be readily employed by the JFC to transmit and receive critical information. It provides the procedures, reporting structures, AISs, and communications connectivity to provide the information necessary to effectively plan, deploy, sustain, employ, and redeploy joint forces. GTN provides planning, command and control, and in-transit visibility of aircraft departure, scheduling, and status information. GTN also provides GCCS scheduling and movement information.

Global Transportation Network (GTN): GTN serves as the transportation module for GCCS, providing planning, command and control, and JTAV of aircraft location, departure airfield, scheduling, and status information. GTN provides GCCS scheduling and movement information. Two of the primary purposes of GTN are to provide a C^2 capability for USTRANSCOM and provide JTAV of personnel and sustainment moving through the DTS. It will also serve as the transportation module for the GCCS and the Global Combat support System (GCSS). Movement requirements and data flow upward into GTN from the installation level (i.e., TC-AIMS II and commercial sources, where movement requirements are originated in response to OPLANs or peacetime



"GTN supports the USTRANSCOM vision and implements the chartered tasking to integrate deployment-related Automated Data Processing (ADP) systems."

Global Transportation Network Operational Requirements Document

[9] Joint Force Requirements Generator briefing, Headquarters, U.S. Marine Corps, September 22, 1999.
[10] Global Command and Control System, Defense Information Systems Agency, Undated.

movements). GTN will provide oversight of Defense Transportation by monitoring the movement of forces, cargo, passengers, and patients and the movement of military and commercial airlift, sealift and land assets. GTN will support JTAV by providing the ability to track the identity, status, and location of DoD unit and non-unit cargo, passengers, patients and forces. It will also track military and commercial airlift, sealift and surface assets from point of origin to destination during SD operations.

Global Combat Support System (GCSS): The JFC needs a single end-to-end capability to manage and monitor units, personnel, and equipment from mobilization through deployment, employment, sustainment, and redeployment. GCSS will provide that capability with a strategy for end-to-end information interoperability across and between combat support functions and C^2 functions to support not only the JFC, but also all combat and logistics users of the system. GCSS is not a new application, a single system, nor a replacement for the Services or DoD Agency systems. Rather, GCSS will be a secure, network information-centric logistics family-of-systems using web-based technology, based upon interoperability and horizontal connectivity across the spectrum of the logistics functions of transportation, supply, maintenance, personnel, health affairs, finance, acquisition and engineer in support of the joint warfighter. "***GCSS is the information tool that will provide logistics operators and the warfighter, at both the joint and component command levels, a fused, integrated, real-time, accurate logistics picture thereby enabling control of the logistics pipeline.*** Control is exercised through electronic collaboration, visibility, use of joint decision support tools, and autonomous and real-time updates. Commanders and staff at every level will be able to analyze logistics data from which to make confident and informed decisions." [11] GCSS will serve as the enabler to achieve not only Focused Logistics but also to support the other operational concepts of *JV 2010.* It will be interoperable with GCCS and will provide the logistics component to the CROP to provide a graphical depiction of critical logistics information for not only RDO, but for all missions across the range of military operations. GCSS will provide "any box, any user, one net, one picture," capability allowing any user with any workstation using a single net to see a CROP of the battlespace. For example, GCSS will enable JTAV by not only permitting combat service supporters and warfighters to see what personnel and materiel assets are in route, but also when and where they will arrive, so they can be diverted to different locations based upon changes in the operational situation.

> GCSS is the link in achieving information fusion and providing universal access to information and interoperability of that information across the spectrum of logistics and ultimately with command and control.
>
> GCSS Strategic Plan

Advanced Logistics Project (ALP): ALP is under development and is a potential replacement for the GCSS. It is a jointly funded initiative between the Defense Advanced Research Projects Agency (DARPA), Joint Staff J4, Defense Logistics Agency (DLA), and USTRANSCOM. ALP is building an information technology

[11] Global Combat Support System Strategic Plan 2000-2003, Joint Chiefs of Staff, 10 January 2000.

infrastructure that will enable warfighters and logisticians at all levels, to work collaboratively with the Services, Defense Agencies and support organizations to quickly develop plans to level 5 TPFDD detail based on real, rather than notional data—**and do it in less than one hour**.[12] The strategy is to "push the limits of technology" to obtain total control of the logistics pipeline. It will be a totally automated distributed logistics planning and execution process, interoperable with industry and providing continuous visibility of assets. One of the four areas ALP is focusing on to achieve a totally integrated logistics system is end-to-end movement control. The goal is to achieve minimal staging while concurrently maximizing global air, sea, and land transportation lift resources across all movement control activities. This will provide the capability to maintain end-to-end control of the transportation and logistics pipeline through the automated development of responsive transportation plans, schedules, and continuous monitoring techniques. This will include both military and commercial transportation lift assets and will ensure the most timely and cost effective use of lift resources. A USTRANSCOM proposed project to leverage the investment in ALP is called Agile Transportation 2000.

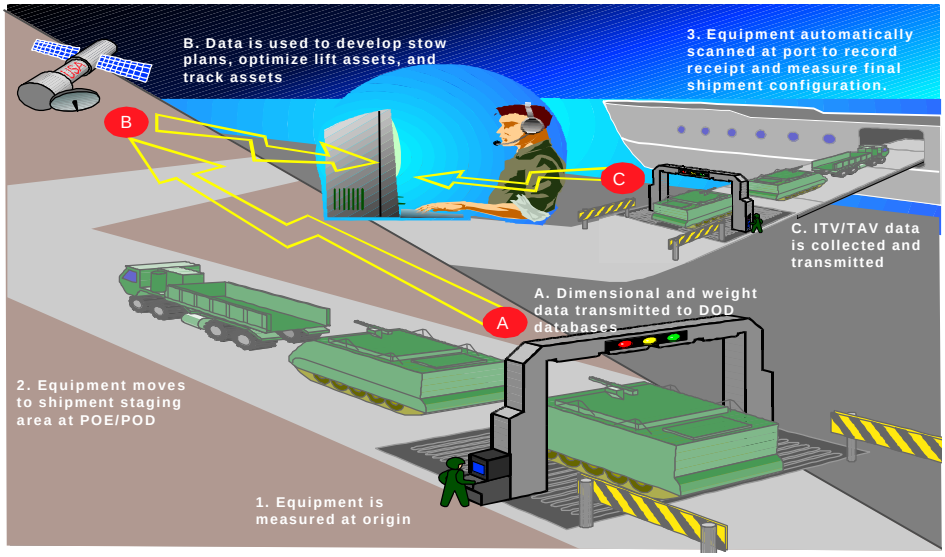
Agile Transportation 2000 (AT2000): AT2000 is a USTRANSCOM proposed advanced concept technology demonstration (ACTD) whose objectives are to: enhance the management of the DTS; capitalize on the various technology efforts on the way or planned for the DTS, and extract from and leverage the technology investments of DARPA (such as ALP above) and the Service labs.[13] The ACTD is intended to address specific DTS management deficiencies and examine the deficiencies that have the greatest impact on USTRANSCOM's customers. USTRANSCOM will focus on these deficiencies with specific pieces of mature advanced technology and leverage investments by DARPA, Service laboratories, other advanced technology demonstrations (ATDs), ACTDs, projects and commercial partners. They will concentrate on data management problems, look for the technology that has the greatest potential to correct a problem with the least transition investment, and enhance existing system capabilities such as the GTN. One of the decision support tools to be developed is called DTS DESKTOP. This will be a voice recognition system that will allow an action officer to "speak to a computer screen" to obtain the current and projected status of the transportation fleet over a given time period, what assets are committed and available for commitment, what the assets are transporting, and when the assets will arrive at destination. The supported and supporting CINCs will be able to observe the same CROP to view the current situation, and point a stylus at a specific problem and discuss the actions required to solve the problem. DTS DESKTOP will also provide action officers the capability to query the database to implement changes, develop "what if" scenarios, and present the CINC with alternatives within **a matter of hours? not days**. The objective is to not just provide a TPFDD in an hour? but an alternative transportation plan within one or two hours.

[12] Advanced Logistics Project briefing, Defense Advanced Research Projects Agency (DARPA), April 1999.
[13] AT2000: Agile Transportation for the 21st Century DTS, USTRANSCOM ,TCJ5 briefing, March 20, 2000.

2.2.2 Phase II - Movement to and Activities at the POE

As the technology initiatives to enable force projection discussed above mature, they will be used to manage the movement of units to the POE. Movement to APOEs and SPOEs in CONUS is a shared responsibility among the Services, supporting CINCs, and USTRANSCOM. Movement to OCONUS APOEs and SPOEs is the responsibility of the CINC whose ports are being used to support the deployment, and the movement may require significant host nation support (HNS). TC-AIMS II will be used to produce movement documentation, unit movement data, interface with commercial carriers, obtain convoy clearances for movement to the POE, and manage the overall outbound movement of the unit. Movement of personnel and equipment to the POE may be accomplished using assigned unit equipment or commercial transportation (e.g., rail loading of equipment and personnel movement by rail, bus, or aircraft, coordinated by the ITO or TMO).

Military POEs will use DoD bar code technology to collect arrival and departure information, compare the information with data prepositioned in the port's AIS, and provide JTAV data to other DoD AISs. Military POEs will produce Optical Memory Cards (OMCs) for shipments they consolidate or reconsolidate for deploying units. They will be able to read Radio Frequency (RF) identification tags, provide JTAV data to other DoD AISs, and produce RF tags for shipments they consolidate, or for shipments of unit and non-unit equipment that arrives without RF tags. A system being developed to **speed up port throughput at POEs and PODs** is called the Transportation Automated Measurement System (TrAMS). This system consists of a twenty foot by twenty-foot scanning device which scans side-to-side, front-to-back, and top-to-bottom to determine the overall dimensions of the vehicle and both the side and top profiles. Accurate, source-based dimensional and weight data are transmitted to



Transportation Automated Measurement System (TrAMS)

the DTS and other DoD AISs where the data is used to record receipt, develop stow plans, optimize lift assets, and track shipments through the DTS. The TrAMS weighing platform weighs each axle of the vehicle and outputs total weight and center

of balance. The system can handle both wheeled and tracked vehicles. This system will significantly reduce manpower requirements, **speed throughput at the port,** and thereby facilitate the rapid build up of combat power in the JOA.

While the foregoing actions take place, the TPFDD continues to be refined as it is throughout each phase of the deployment process. The JFC has the authority to change the TPFDD flow at his discretion. Other factors that may necessitate changes to the deployment database are:

- Changes in mission, mission objectives, or the threat.
- Non-validated forces and/or sustainment added to the deployment flow.
- Changes to loading dates based on transportation lift availability or other factors.
- Delayed arrival or departure of units to or from the POE.
- Delays created from denial of overflight rights, disasters, etc.
- Emergency requirement for forces or sustainment in the AOR.

One of the critical activities that takes place at the POE is load planning. It is important because it affects the configuration the unit will be in when it reaches its destination, and how quickly it will be mission capable after arrival. Some of the factors impacting load planning are mission, (e.g., combat, peacekeeping, disaster assistance, humanitarian assistance), transportation lift assets available, and the capability of the POD to receive, offload, and reassemble the unit to a mission capable posture. Based upon these factors and the JFC's guidance, joint forces will be loaded in one of the following manners:

- **Combat loading:** Combat loading generally does not maximize the space available on lift assets. It configures unit personnel, equipment, and materiel so as to be mission capable immediately upon debarkation. Combat loading can be conducted at the point of origin, or units can be administratively loaded at point of origin to maximize strategic lift assets, and then combat loaded at Intermediate Staging Bases (ISBs) for movement into the JOA. Although this would maximize the use of strategic lift assets and project forces into the JOA earlier, it would transfer the burden to intra-theater lift assets that have a more limited capacity. Loading forces so they can be rapidly inserted directly into the operation eliminates or reduces staging and onward movement in the JOA, but carries a penalty in the amount of equipment that can be transported. Additionally, equipment that is pre-armed and fueled poses a greater risk if there is an accident or resistance while it is in transit. Currently few forces are combat-loaded in CONUS. Preference has been given to administrative loading to maximize CONUS loads, particularly aboard strategic sealift ships, to deliver the most unit equipment to the JOA in the shortest time. RDO strongly suggests this be re-examined. There are many variations to where, when, and how combat loading should occur. The dynamics of combat loading should be explored to determine the optimum benefit to the JFC.

- **Unit loading:** Maintains unit integrity by allowing unit personnel to move with their equipment and sustainment on the same lift asset. More efficiently uses lift assets than combat loading.

- **Administrative loading:** Maximizes the lift capacity of the lift asset but personnel, equipment, and materiel must be reorganized before the unit is mission capable.

2.2.3 Phase III - Movement to the POD

Phase three of deployment operations addresses that portion of SD in which joint forces and initial sustainment are transported to the APODs and/or SPODs and are integrated with forward presence forces for mission accomplishment. Movement to PODs is accomplished using organic, assigned, or common-user lift assets. Movement by common-user lift is planned and executed by USTRANSCOM in collaboration with the J3s and J4s of the supported and supporting CINCs. "Virtual" mission planning by Joint Task Force (JTF) personnel should continue while enroute to the POD. The time frame for planning and movement to the POD must be shortened to rapidly project the combat power the JFC requires at the time and place he requires them.

In certain circumstances it will be possible to deploy forces directly to combat (e.g., Ship To Objective Maneuver (STOM) where forces move directly from the deck of ships to an objective and receive their sustainment from rotary wing or tilt-rotor aircraft). A sea-based SD capability, such as STOM, is critical in those cases where overflight or basing rights in or near the JOA have been denied, or aircraft runways or seaports are inadequate or unavailable. What are needed are ships with lighter hulls capable of faster speeds in rough ocean conditions. This would allow a faster closing of combat power in the JOA.

In other circumstances, time and distance factors will require that forces be brought to ISBs outside the JOA and likely outside the range of known adversary weapon systems. It is likely that these ISBs will be numerous and will serve multiple purposes (e.g., staging, marshalling, assembly, etc.), in a manner similar to, but more streamlined than, JRSOI. Ideally ISBs will be located in countries friendly to our interests, but that may not be the case. In certain circumstances some ISBs may be afloat. Extended distances from ISBs to the JOA may be a factor. Their overall purpose will be to receive, rest, and integrate the forces for onward movement directly into the mission environment. Those actions recommended in paragraph 2.2 above should be taken to maximize the capacity of lift assets. In addition, the following initiatives should be evaluated to determine their capability to more rapidly project combat power to the JOA and speed up force closure.

Near Term Airlift Modernization and Modification Requirements:

On February 29, 2000, subsequent to testimony before the Senate Armed Services Committee (SASC), the Commander in Chief, US Central Command (USCENTCOM) stated in an interview:

> **"Strategic airlift in general is our number one concern and the area we place as our top requirement, and airlift as a whole…We are worried about the maintenance of the C-5 fleet. I certainly would like**

> **to see more C17s. The key to success in our warplans is our ability to get the forces there right away. The initial stages in time are critical to us."[14]**

The CINC's statement before the SASC also advocated the continued modernization and maintenance of all SD assets in the strategic mobility triad (i.e., airlift, sealift, and PREPO). During his testimony before the same SASC, the Commander in Chief, US European Command (USEUCOM) stated that he supported the "…full funding for C-17 aircraft with required modifications and logistics sustainment, as well as specified C-5 aircraft modifications."[15] The statements of both CINCs recognize the shrinking numbers of the C-141 fleet as they approach their retirement in 2006, the increased reliance on the maintenance intensive C-5s, and the limited number of C-17s. To alleviate these **near term** problems, **immediate funding** is required to accomplish the following:

- **C-5 Galaxy:** The Air Force has approximately 126 C-5s that transport primarily outsized and oversized cargo (e.g., M1A2 Abrams Main Battle Tank). During testimony before the House Armed Services Readiness Subcommittee on October 26, 1999, the Commander in Chief, USTRANSCOM, stated that the mission capability (MC) rate for the C-5, expected to be 75 percent, was, at that moment, between 56-58 percent. The low MC rate is partially attributable to supply shortages and partially to modifications required. To correct problems with the C-5, the Air Force has created the "Avionics Modernization Program (AMP)" and the "C-5 Reliability Enhancement and Re-engining Program" which are designed to:

C-5 Galaxy

  - ✓ Replace the C-5's current unreliable engines with new engines possessing at least 25 percent more thrust.
  - ✓ Replace high-pressure turbines.
  - ✓ Install a new "glass cockpit" avionics system.
  - ✓ Repair hydraulic problems.
  - ✓ Install Global Positioning System (GPS) enhanced navigation capabilities that meet global air traffic management requirements.
  - ✓ Install collision avoidance technology.

[14] Defense Daily, March 1, 2000, page 3.
[15] Ibid.

✓ Install missile detectors, chaff, and flare systems.

The CINC further testified that if full funding were made available immediately, based on the length of time required to complete the associated research, development, testing and subsequent modifications, and if the new modifications were successful, the MC rate would not rise "significantly" until 2005, and would not begin to approach the required 75 percent MC rate **until 2014.**[16] These programs need to be fully funded and expedited now to achieve the 75 percent MC rate much earlier than the 2014 projected date, to reduce our current inter-theater airlift vulnerability.

➢ **C-130 Hercules:** The Air Force currently has approximately 700 models "E" and "H" C-130s of different configurations that perform various tasks, most notably, theater long-range, day-or-night airland or airdrop missions. The Air Force has begun buying the modernized "J" model C-130, which will climb higher and faster, fly at higher cruise speeds, and take off and land in a shorter distance than the "E" and "H" models. The "J" model will replace the older "E" and "H" models. One of the near-term issues requiring resolution is the vulnerability of the aircraft to Man Portable Air Defense Systems (MANPADS). The Air Force is concerned with the proliferation of heat-seeking, shoulder-fired missiles that pose a threat to large aircraft. To combat this threat, the Air Force has initiated a program called "Large Aircraft Infrared Countermeasures (LAIRCM)" to equip some, but not all, C-130 and other transport and tanker aircraft with lasers capable of jamming infrared guided missiles. This program is not scheduled to begin until Fiscal Year 2004.[17] Another near term possible issue being debated is the allegation that the new C-130J is "…extremely vulnerable to gunfire striking its wings and causing fires…." and "…the Air Force should consider installing gas generators to reduce the risk of fire."[18] These deficiencies should be corrected immediately to reduce the vulnerability of the aircraft.

C-130J Hercules

C-17 Globemaster III

➢ **C-17 Globemaster III:** Currently, there are approximately 58 C-17s in the Air Force inventory with plans to increase the number to 120 by 2003. It is anticipated that an additional fourteen C-17s for SOF use will be ordered at some future date,

[16] Statement of General Charles T. Robinson, Jr, USAF, CINCTRANSCOM, October 26, 1999, before the House Armed Services Readiness Subcommittee.
[17] Jane's Defense Weekly, February 16, 2000.
[18] Defense News, March 6, 2000, page 3.

bringing the total fleet to 134. The current MC rate is 90 percent. However, how long this MC rate can be maintained is in doubt because of the shortage of spare parts. During testimony before the House Appropriations defense subcommittee on March 8, 2000, the Secretary of the Air Force stated "We are cannibalizing spare parts from new planes for other new planes because the planes are coming out more quickly but the spare parts are not."[19] The C-17 is used for strategic airlift and can be used for intra-theater lift to move personnel and materiel into austere locations. It can carry virtually all of the Army's air-transportable equipment. Near-term C-17 modifications required to improve SD capabilities are:

- ✓ Installation of LAIRCM laser jammer modification.
- ✓ Installation of improved Station Keeping Equipment (SKE) that uses radio frequency channels to keep aircraft in tight formation during inclement weather, particularly during Strategic Brigade Airdrop (SBA) operations.
- ✓ Installation of 16-foot platforms and metal rails that will enable the air drop of two rows of equipment pallets at a time vice the current one row, thereby doubling the equipment stowing capacity of the aircraft.

Another near term problem with the C-17 is that there are just not enough of them. The current plan is to replace 270 C-141s with only 134 C-17s (the Secretary of the Air Force is considering whether or not to delay the retirement of sixty-three C-141s assigned to the reserve components from 2006 to 2010)[20]. Although the tonnage moving capability remains about the same, flexibility in the airlift system is lost just because of the lack of numbers, or, what the Air Force refers to as the "number of tails." Simply put, 134 C-17s can only be in half as many places as 270 C-141s. This situation, coupled with the low MC rate for the C-5, is the crux of the strategic airlift quandary. Once the Mobility Requirements Study 05 (MRS 05) has been completed and the DoD mobility resources required through 2005 have been identified, a cost benefit analysis should be conducted. The analysis would determine the optimum mix of C-17s and C-5s necessary to meet anticipated requirements, in view of the remaining airframe life of the C-5 (80 percent) and the cost of upgrading them, versus purchasing additional C-17s at the lowest possible unit cost, while keeping the production line operating optimally.

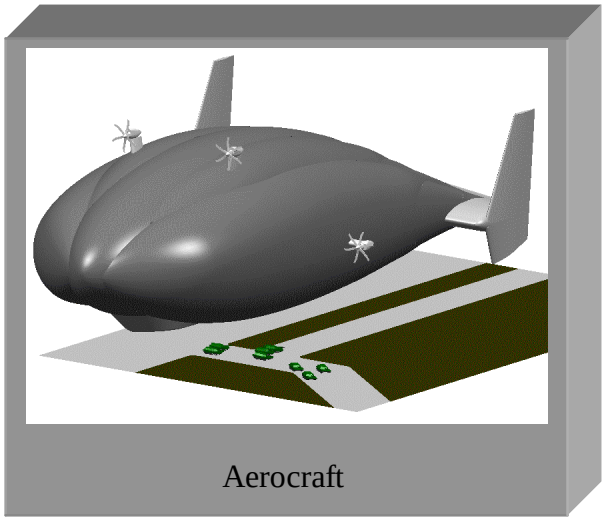
While accomplishing these near term modernization and modification requirements, attention must also be given to emerging and notional inter-theater airlift and sealift alternatives and their potential for accelerating force closure, increasing agility, and projecting combat power.

[19] Defense News, March 20, 2000, page 8.
[20] Inside the Air Force, March 24, 2000, page 1.

Emerging and Notional Inter-Theater Airlift Alternatives:

Innovative strategic lift platforms designed with the latest technology, along with the resulting flexibility, will provide the JFC with additional options for projecting combat power and extending operational reach. Tailored joint force packages could deploy on the same aircraft (or High Speed Sealift ship) with the equipment they train with, thereby negating, or at least minimizing, the need for PREPO material and JRSOI activities? and arrive in the mission area ready to conduct operations. The movement of personnel and equipment on the same platform would increase the agility of the force, ensure unit integrity, and allow the JFC to divert an entire force with equipment to meet changing operational requirements and capitalize on emerging adversarial vulnerabilities.

- **Ultra Large Airships (ULAs):** The size, payload, and quantity of current strategic inter-theater airlift significantly limit the size force that can be projected and sustained from CONUS. Ultra Large Airships (ULAs) could allow the projection of CONUS forces to offshore sea bases or ISBs. During RDO these additional forces could add increased lethality in the JOA or be rotated with RDO forces. Depending on their size, ULAs might link up with, or even carry, small-unmanned aircraft capable of ferrying sustainment or small unit teams directly into the JOA. As an example of future possibilities, Lockheed Martin Skunk Works (LMSW) is developing a hybrid airlifter for the commercial "mid-market" called the "Aerocraft," which achieves slightly more than 50 percent of its lift from helium and the remaining from aerodynamic lift. Because the Aerocraft is being built for the commercial rather than the military market, it could become part of CRAF. It has a planned payload of 1 million pounds (500 short tons), with 15.8 thousand square feet of cargo space, a range of 2,300 nautical miles at a cruising speed of 132 knots at 4,000 feet above sea level.[21] As currently envisioned, the Aerocraft will be 454 feet wide, 854 feet long, and 278 feet high, and capable of transporting a Theater High Altitude Area Defense (THAAD) Firing Battery, Patriot Firing Unit, Apache Helicopter Company, Comanche Helicopter Company, or 31 Light Armored Vehicles (28,200 pounds each). Because of the pounds-per-square-foot limit of the airship floor, the M1A2 Abrams Main Battle Tank cannot be transported on the Aerocraft. With greater load bearing floors, six M1A2s could be transported.[22] The Aerocraft will have a winch to onload and offload rolling stock that cannot move under its own power. There are at least two other companies working on ULAs



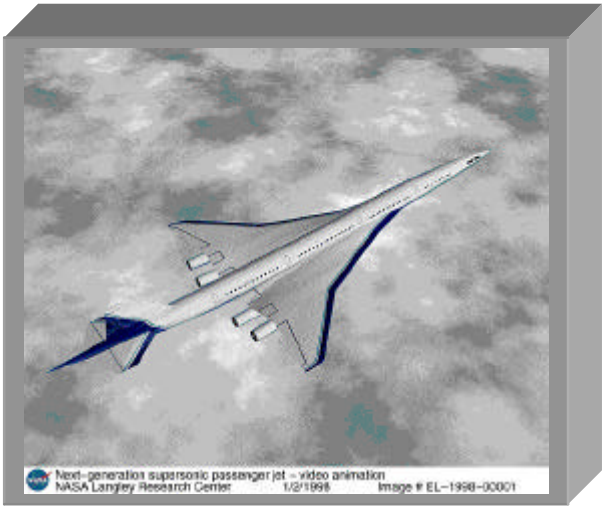
Aerocraft

[21] Aerocraft Program, Lockheed Martin Skunk Works, February 2000.
[22] Ultra Large Airship Concept of Operations (Draft), Logistics Management Institute, February 2000.

besides LMSW. A ULA might sacrifice speed for payload, but it will still be significantly faster than conventional sealift vessels and still carry a substantial payload. Because their large size, relatively slow speed, and low operating altitude would increase their vulnerability, ULAs would not deliver directly into the JOA, but rather to sea bases and ISBs. There should be collaboration between the military and LMSW to incorporate national defense features to optimize military cargo and passenger lift requirements in terms of loading, length, width and ceiling heights of the cargo bay, ramp capacity, loading and unloading methods, range and payload, cargo door location, height and width (i.e., we need to stimulate and shape commercial engineering designs to meet our force projection needs).

- **Heavylift Sea plane:** Consideration should be given to a heavylift sea plane that could land offshore and interface with JLOTS capabilities or a sea based support platform, to discharge its high priority cargo. The heavylift sealift plane could also deliver high priority cargo to littoral support ships anchored outside the range of the adversary's weapon systems, perhaps in areas where landing or basing rights have been denied. The plane would have the technical and operational characteristics of the C-17, (i.e., cruising speed of 450 knots at 28,000 feet, global range with in-flight refueling, 102 troops/paratroops, 171,000 pounds of cargo, 18 pallet positions), but be capable of landing at sea.

- **Supersonic Aircraft:** Faster airlift provides a different approach to deployments from CONUS. Until the end of 1999, the National Aeronautics and Space Administration (NASA) was working on a project called the High-Speed Civil Transport (HSCT) with the objective of building a passenger jet that could travel at 1,500 miles per hour at 55,000 feet, while carrying 300 passengers, for 6,500 nautical miles. Supersonic aircraft would carry a significantly smaller payload than ULAs, but could insert lethal forces very rapidly into the JOA. They would also have a very short cycle time (about one hour), allowing the deployment of a credible force in a reasonably short period.



- **Advanced Mobility Aircraft (AMA):** Lockheed Maritn Aeronautical Systems is developing a "box-wing" multi role tanker/transport called the Advanced Mobility Aircraft (AMA) that is envisioned as a replacement for the KC-135 Stratotanker. The AMA will carry fuel to conduct refueling operations, or a combination of fuel and cargo. It will be approximately the size of a C-141, but carry twenty percent more cargo, and be manned by a two-person crew. The AMA will be capable of carrying 30,000 pounds of cargo and 70,000 pounds of fuel concurrently, or 105,000 pounds of cargo only, for 4,200 nautical miles. It can offload 100,000 pounds of fuel at an operational radius of 2,100 nautical miles. The AMA cruises at

538 knots at 35,000 feet and can land on a 5,000-foot hard surface runway. Unlike the KC-135, which carries fuel for refueling operations under a sub-floor of the cargo deck, the AMA carries the fuel in the four wing sections (see graphic above) leaving the entire fuselage available for cargo. Other characteristics are:


Advanced Mobility Aircraft (AMA)

- ✓ Wingtip booms and drogues can refuel two tactical aircraft simultaneously while requiring one boom operator. It will carry twenty-five percent more transferable fuel than a KC-135R.

- ✓ Rear cargo ramp for roll-on/roll-off loading. Can transport five twenty-foot or two forty-foot ISO containers or combinations of both.

- ✓ Compatible with existing infrastructure.

- ✓ Can transport fourteen full height 463L pallets vice the nine "contoured height" pallets that can be transported on the KC-135.

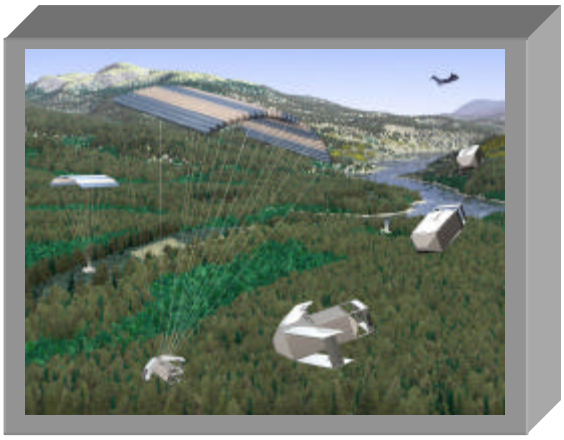
- ✓ Commercial off the shelf aircraft subsystems maximize the use of commercial support infrastructure.

Because of the larger number of commercial aircraft and crews in daily service, and the military's reliance on CRAF airlift assets, the partnership between the military and commercial carriers should be strengthened and subsidized to ensure that national defense features are identified and incorporated into the future design of airframes.

Emerging and Notional Airdrop Alternatives:

Depending upon the JFC's planned scheme of maneuver to accomplish the mission, it may be necessary, or desirable, to conduct airdrop operations to deliver equipment and/or sustainment directly into the objective area using strategic airlift assets flying directly from CONUS or other locations well outside the JOA. Current airdrop operations require delivery aircraft to fly directly over the designated drop zone (DZ) at low altitudes (700-1,200 feet above ground level) to accurately deliver payloads. Rapid force projection is hindered by shortfalls in the ability to accurately deliver light to heavy loads, conduct aerial resupply, and provide accurate and timely delivery of needed equipment and sustainment in all operational environments and in all types of weather. Although today's systems can be delivered from high altitudes, accuracy is severely degraded, requiring large DZs and an inordinate amount of time to reassemble the dropped loads. Survivability of the delivered load is also problematic. Improved precision airdrop capabilities will provide aerial delivery options that will enhance mission flexibility, reduce threat exposure to aircraft, and provide a means to rapidly deliver equipment and sustainment directly to the force ready for mission

execution. An accurate high altitude delivery capability will significantly reduce aircraft vulnerability in non-permissive airdrop environments where MANPADS, light antiaircraft artillery, and small arms are prevalent threats. Improved delivery will also allow for smaller DZs and reduced load dispersion on the DZ, resulting in faster operational readiness and force projection.[23] The capabilities of some of the systems under consideration are:



- **Guided Parafoil Air Delivery System (GPADS):** The GPADS Global Positioning System (GPS) receiver will be navigated and controlled by the GPS and have a payload capability ranging from 250-42,000 pounds that can be deployed from an altitude of up to 25,000 feet and land within 100 meters of a designated point. The system has an "offset distance" (i.e., the distance from the DZ it can be dropped) of 20 kilometers and be guided into the DZ by the GPS. Multiple payloads can be dropped simultaneously from the same aircraft, with each load landing on a different DZ. The design objective is to have no more than 15 percent damage to all cargo, and not more than 5 percent loss of cargo due to unrecoverable damage.

Semi-Rigid Deployable Wing

- **Semi-Rigid Deployable Wing (SDW):** The SDW consists of a double surface, ram-air-inflated airfoil stiffened with an internal rigid structural frame and mated with a cargo pod. It can be made in a light version to carry 600 pounds, or a medium version to carry 2,000 – 5,000 pounds. The SDW can be dropped from an altitude of up to 25,000 feet and land within a 100 meters of a designated point. Without glide augmentation the SDW has an offset distance of 20 kilometers, and with glide augmentation up to 300 kilometers. As with the GPADS, this is a multiple payload system, and the design objective is to have no more than 15 percent damage to all cargo, and not more than 5 percent loss of cargo due to unrecoverable damage.

Notional Army Future Combat Vehicle

- **Precision Roll-On/Roll-Off Aerial Delivery:** This system will provide a RO/RO airdrop capability for heavy

[23] Operational Requirements Document for Precision Extended Glide Airdrop System (PEGASYS) (Draft), U.S. Army Quartermaster School, 17 March 2000.

cargo (minimum 15,000 pounds), and reduce rigging requirements by 60 percent. Rigging requirements are reduced because airbags are positioned between the payload and the platform to absorb the impact energy of the payload upon landing. It can deliver separate payloads to multiple locations and deliver them within 50-100 meters of a designated point. Once on the ground, it can be rapidly de-rigged and immediately driven off the delivery platform.

Emerging and Notional Inter-Theater Sealift Alternatives:

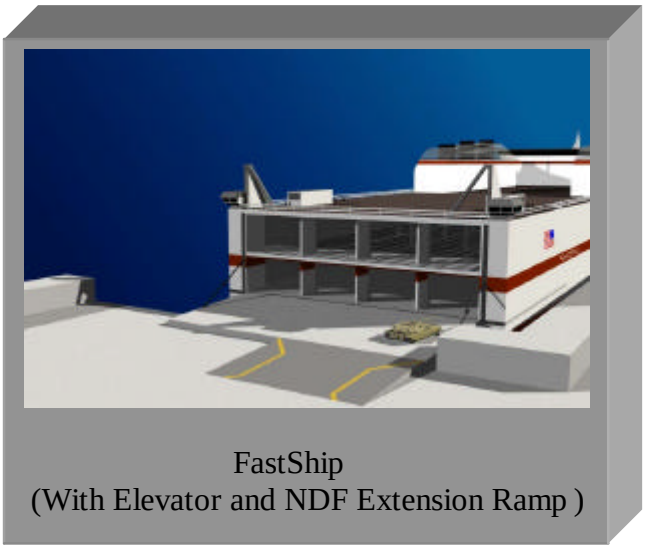
One of the dramatic examples of prior planning and resourcefulness in the Falkland Islands conflict was that the United Kingdom had made the effort to pre-arrange the rapid takeover of commercial shipping for military uses in a program called Ships Taken Up From Trade (STUFT). While this is not a new idea in any country's military contingency planning for general mobilization, it was somewhat new in the British example because commercial lift was used as part of the **immediate** response to the need for deployment. In the case of planning lift capabilities in support of RDO in the *JV 2010* context, there is no reason why commercial lift (under both the Voluntary Intermodal Sealift Agreement (VISA) and CRAF arrangements) cannot become part of the **rapid response** capability during collaborative crisis action planning. The key in successfully using this option to replace or supplement military organic lift capability is prior planning, detailed arrangements, and commitment of the commercial sector to provide the capability. Whether or not commercial lift will also take part in combat operations (as happened in the Falklands conflict) is a different but related issue. One of the capabilities our country needs is high-speed sealift to rapidly close combat power into the JOA.

High-Speed Sealift (HSS): Faster inter-theater sealift provides a larger payload than heavylift aircraft with a significant speed advantage over conventional ships. Using advanced hull designs, high power, fuel efficient machinery, and advanced structural designs using light weight, high strength-materials, it will be technologically feasible in 10 years to build a HSS ship capable of a speed of at least 40 knots, with a range of 10,000 nautical miles carrying a payload of 5,000 short tons and able to onload and offload cargo in undeveloped ports and at sea.[24] Generally these ships would deliver units or supplies to a sea base or ISB, but, if the JOA is contiguous to the sea, units and resupply could be delivered directly to the coast or to the objective. These ships could also be configured to support direct delivery of sustainment and small units by use of small manned or unmanned aircraft. Fast sealift ships would be particularly useful if the initial RDO force was being replaced or augmented by a more robust force. Some of the possibilities worthy of exploration are:

FastShip Atlantic: A consortium called FastShip Atlantic, Inc. is building four container vessels to transport high-value, perishable, and other time-sensitive cargo at twice the speed of conventional ships. It will make the trans-Atlantic crossing from Philadelphia to Cherbourg, France, in less than four days, and provide door-to-door

[24] High-Speed Sealift Technology, Volume 1, Carderock Division, Naval Surface Warfare Center, September 1998.

service between the US Midwest and Central Europe (e.g., Chicago to Frankfurt, Germany) in seven days. Commercial operations are scheduled to begin in 2003. Each ship will be 860 feet long, capable of transporting 12,000 short tons (158,000 square feet of cargo), and sustain speeds of up to 40 knots. The hull and propulsion system will enable the ship to maintain its speed even under adverse weather conditions (sea state 7 to 8). Ships will be loaded and unloaded in six hours using a unique, patented, rail-based roll-on/roll-off system without the use of cranes. The vessel can be modified to transport tanks, trucks, and helicopters, and all military cargo would be carried internally (i.e., no open deck stowage). Because of the configuration of the lower cargo deck, FastShip will accommodate over 300 units of the Elevated Causeway System (Modular) (ELCAS(M)), which can be self-deployed from the cargo deck to a beachhead. For unloading in-stream, the ship's bow and stern thrusters can be linked to a dynamic positioning system and the stern ramp and elevator can be used to unload onto a pontoon or other system. A preliminary assessment of the national defense features (NDF) necessary to convert the ships from commercial to military use has been made by the ship designer. The designer has estimated it will take one to three days to convert each vessel, and one ship can transport one armored brigade. The national defense features required are:



FastShip
(With Elevator and NDF Extension Ramp)

✓ Permanent National Defense Features Required to be Built Into the Vessel:

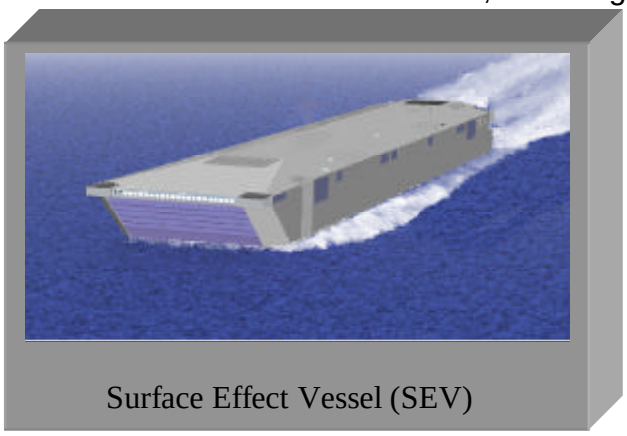
- Stern ramp modifications to accept an extension for military use.
- Additional sea-fastenings for lashing unit equipment.
- Additional fuel tanks and water-making capacity.
- Enlarged capacity air-conditioning and firefighting system.
- Some re-arrangement of structure and deck pillars to accept military loads.
- Modifications for increased port maneuverability and/or dynamic positioning for in-stream unloading.
- Additional mooring equipment.
- Upgraded gas turbines for operating at very high ambient temperatures.
- Underway Replenishment capability for refueling, receiving stores.

✓ Bolt-On National Defense Features Required During Contingency Execution:

- Extension to the stern ramp-elevator for austere port unloading.
- Underway Replenishment operating equipment.
- Strengthened lower cargo deck panels for heavy combat vehicles.
- Possible C4I and self defense systems.

A new platform such as this could significantly increase the projection of combat power and reduce the current reliance on vulnerable PREPO assets. Action should be taken to provide the funds to incorporate the national defense features, or else there is a possibility that foreign governments may provide funding to build the vessels and the ships flagged accordingly, thereby placing them outside the reach of the US Government.

- **Surface Effect Vessel (SEV):** SEVs are hybrid surface effect ships that incorporate rigid catamaran-like sidehulls and bow and stern seals to create a plenum pressurized by air. The result is a craft which is 80 percent supported by pressurized air and 20 percent supported by buoyancy. When the plenum is pressurized (on-cushion), the wetted surface of the sidehulls is reduced, reducing drag and allowing high speeds. Litton Ingalls Shipbuilding has designed (concept design) a transoceanic SEV capable of average transit speeds of 70-75 knots with payloads of 5,000 short tons over a range of 8,700 nautical miles. Ingalls is also designing a smaller coastal SEV (container/RO/RO) as a possible contender for the Army Theater Logistic Vessel (TLV) requirement, and a fast ferry SEV (RO/PAX) that may have intra-theater or riverine warfare applications. The transoceanic and coastal SEV designs are gas turbine powered, water jet propelled and have shallow drafts. They can transport both track and wheeled vehicles as well as containers and will be self-sustaining (i.e., can offload itself) vessels that can rapidly offload in damaged or austere ports, or directly across a beach without the aid of JLOTS. The speed and payload of the vessel would provide the JFC with the capability to strategically maneuver forces into positions of operational advantage on a global basis. The vessel's shallow draft, coupled with its other features would make it useful for maneuvering forces within the theater. It could provide the JFC with the element of surprise and keep the adversary "off balance" because his entire shoreline would be vulnerable to attack. SEV is a platform that offers a solution for the "last 1,000 yards" problem. Its shallow draft would also provide operational agility by allowing the **rapid global deployment of a joint strike force from CONUS,** with sustainment, over long distances directly into a littoral objective area, and/or to **rapidly augment the deployed force**. It could also be used to shuttle forces from ISBs into the JOA to austere locations that are not accessible to large draft vessels. Once forces have been deployed, the vessel could be used for inter-theater sustainment operations or intra-theater sustainment operations from sea-based support platforms or ISBs. The delivery of personnel and sustainment could be accomplished without the need for JRSOI activities.



Surface Effect Vessel (SEV)

2.2.4 Phase IV - Joint Reception, Staging, Onward Movement and Integration

JRSOI is the responsibility of the supported CINC receiving forces. It expedites the continuous and controlled flow of forces and sustainment into and within the AOR. JRSOI enhances the efficient use of limited assets, personnel, and facilities by avoiding saturation at nodes (e.g., APODs and SPODs) and along lines of communication enroute and within the AOR. JRSOI includes receiving personnel, materiel, and equipment; assembling them into units at designated staging sites; moving the units to a destination within the JOA or AOR; and integrating the units into a mission-capable joint force.[25] It is a time consuming and manpower intensive process. One possibility to be examined is whether or not JRSOI activities can be reduced, or, ideally, completely eliminated. Sea-based forces may achieve mission capable status while in route as a result of "virtual" collaborative planning, training, inspection of equipment, and other activities. Assured communication connectivity will allow embarked commanders to coordinate with the JFC's headquarters ashore to facilitate the integration of embarked forces with forward presence forces, and immediately project combat power directly into the forward mission area. Depending upon the flight time from point of origin to destination, forces inserted by air may be mission-capable upon arrival (e.g., the XVIII Airborne Corps' deployment to Haiti), and immediately add to the JFC's combat power. Ultra Large Airships (e.g., Aerocraft), and high speed sealift (e.g., SEVs), capable of transporting entire units (i.e., personnel along with their equipment) directly into the JOA ready to execute their mission may completely negate the need for JRSOI activities. Currently we have intra-theater aircraft capable of vertical take off and landing (V-22, H-53, 47, and 46), but their payload may still not be large enough to support from-the-sea operations. A heavier payload aircraft, capable of taking off and landing on 600-foot dirt airstrips, roads, or farm fields (e.g., the Advanced Theater Transport (ATT)), may be required to provide the flexibility envisioned in RDO. Modeling and simulation in experimentation will be the key to determining the preferable design and payload and validating the take off and landing distances. The ATT and Quad TiltRotor's intra-theater range, runway length, payload, and other characteristics are some of the considerations that should be explored. Fast shuttle sealift (FSSL) allows rapid sea delivery from sea-based platforms or intermediate staging bases in those instances where the JOA is contiguous to the sea. FSSL would not be tied to fixed port facilities and would provide alternatives to increase flexibility in any operation where the JFC has access to the sea. A variety of hull and propulsion technologies should be investigated to provide a suitable FSSL platform.

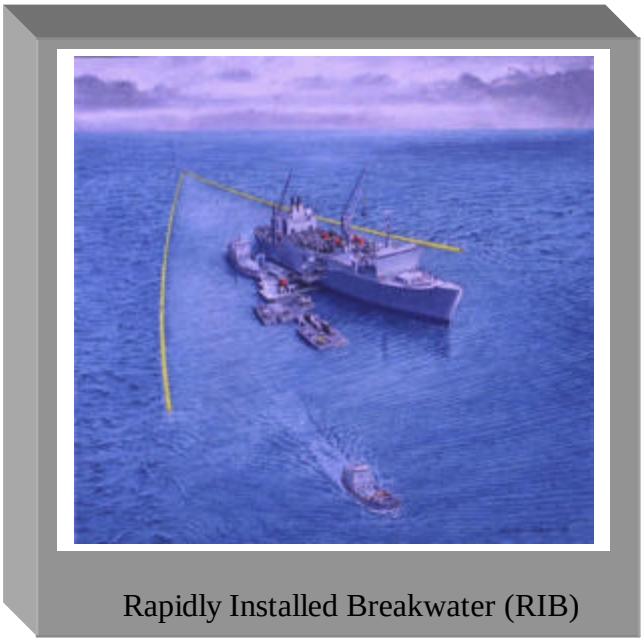
Prepositioning (PREPO):

Currently PREPO afloat or ashore is recognized as an essential component of the strategic mobility triad (i.e., airlift, sealift, and prepositioning). Pre-loading unit equipment aboard various transportation assets or pre-staging at home stations, ISBs, or other forward presence locations, provides alternative ways to cut hours or days from the deployment process. Although it may reduce the deployment time by hours

[25] JTTP for Reception, Staging, Onward Movement, and Integration, page ix, 8 February 2000.

or days? PREPO is **very** expensive. In 1995, for example, DoD was spending $989 million per year in annual ship operating and PREPO equipment maintenance costs.[26] When weapon systems are upgraded or equipment reaches the end of its service life, they must be replaced or upgraded. In 1997, it was estimated that it would cost $706 million to replace just one Army brigade in PREPO with current equipment.[27] Today, many of the ships to be used for early-deploying forces are known, as are the deployment ports and deploying units. PREPO presents a **lucrative target** for terrorists or other adversaries and from CBW, WMD, or non-lethal weapons. PREPO is also vulnerable in other ways. In addition to being a stationary target, access to land-based PREPO could be denied or impeded by the host nation if that nation were sympathetic to the cause of the adversary because of shared political, ethnic, religious, or other views. Additionally, PREPO is not always positioned in the most advantageous location relative to the contingency it needs to support. One of the recommendations of Defense Science Board is that the CINC should "be independent of prepositioning and enroute bases."[28] The development and fielding of future airlift and sealift platforms, some of which are described in this paper, may eliminate, or at least significantly reduce, the need for PREPO. This possibility should be examined during experimentation.

Large Medium Speed Roll-On/Roll-Of (LMSR)



Rapidly Installed Breakwater (RIB)

Joint Logistics Over the Shore (JLOTS):

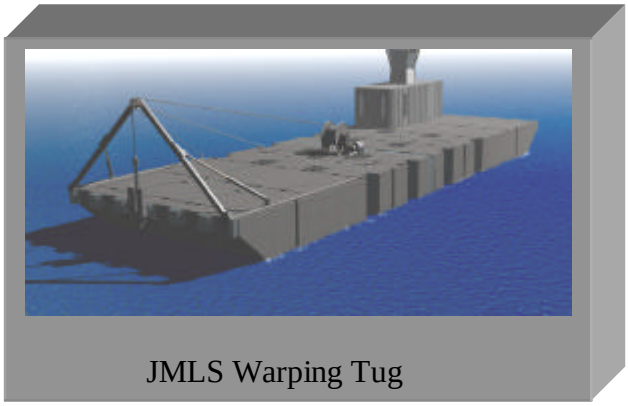
As discussed previously, JLOTS is used for access to undeveloped areas where seaports are not available, inadequate, degraded or denied and/or to provide the JFC the option of placing forces and sustainment ashore where and when needed without being tied to a vulnerable fixed seaport. The Defense Planning Guidance requires JLOTS sea state 3 capability by 2005. Emerging JLOTS systems are:

[26] Strategic Mobility: Possibilities for High Speed, Logistics Management Institute, April 1996.
[27] Ibid.
[28] Summer Study on DOD Logistics Transformation, Defense Science Board, October 1998.

- **Rapidly Installed Breakwater (RIB):** The RIB is a JLOTS deployment capability enhancement currently being developed as part of an approved Advanced Technology Demonstration (ATD). The RIB is a rapidly deployed floating structure that will serve as a breakwater to mitigate high seas by creating an area of calm seas in which deep draft shipping can be secured, providing the Army and Navy lighters a protected interface with a ship for discharge. This will allow the JFC to discharge ships and project his force in sea state 3 or higher conditions.

- **Joint Modular Lighter System (JMLS):** The JMLS will provide the JFC the capability to transport RO/RO, Lift-On/Lift-Off (LO/LO), and break bulk cargo ashore from military and commercial ships in-stream during sea state 3. JMLS can be offloaded, assembled, operated, disassembled, retrieved and back-loaded through sea state 3 conditions, and will be interoperable with existing Army and Navy logistics over-the-shore systems, craft, and strategic sealift ships. JMLS consists of five sub systems. They are:

  ✓**JMLS Warping Tug**: Warping Tugs are used to assemble modules into sub systems, move assembled sub systems, place anchors and perform other tug utility functions through sea state 3 conditions. The Warping Tug is self-propelled and is designed to support pushing, pulling, restraining, and maneuvering each fully assembled, fully loaded JMLS subsystem through sea state 3 conditions. Warping Tugs have a lifting system to support lifting, installing, and retrieving anchor systems at sea for all JMLS subsystems.[29]



JMLS Warping Tug

  ✓ **JMLS Floating Causeway (FC):** The FC provides larger displacement lighters a discharge pier up to 1,500 feet off-shore when beach gradients are to shallow too allow direct discharge of equipment and cargo directly onto the beach. The FC has a variable length (expandable) roadway that allows assembly of the shortest roadway that will still ensure a depth of twenty feet of water at the docking pier head at mean low tide. It also has a beach interface ramp so that wheeled or tracked vehicles can have unassisted access to the FC from the beach. The roadway allows for two-way vehicular traffic excluding material handling equipment (MHE). The FC has an articulating joint hinge every 240 feet that allows for changing causeway attitudes caused by wave and wind action.

  ✓**JMLS Causeway Ferry**: The Causeway Ferry consists of powered, non-powered and ramp modules used in the delivery of equipment and sustainment from the ship to shore. The Causeway Ferry will be capable of being moored to a Roll-

[29] Joint Modular Lighter System Concept of Operations (Second Draft), US Joint Forces Command, March 2000.

On/Roll-Off Discharge Facility (RRDF) or alongside a ship, receiving rolling stock and LO/LO cargo from commercial and strategic sealift ships anchored in-stream, and then transporting the materiel to the shore through sea state 3 conditions. The Causeway Ferry can transport 400 short tons from ship to shore.

JMLS Causeway Ferry

✓**JMLS Roll-On/Roll-Off Discharge Facility (RRDF)**: The RRDF is a floating cargo transfer platform that enables vehicles to be driven off a ship and onto a Causeway Ferry or other lighters. It provides sufficient buoyancy and structural and deck strength to accept a RO/RO ship ramp loaded with two main battle tanks, while simultaneously having rolling stock and personnel on the platform through sea state 3 conditions. The RRDF also provides an interface for simultaneous loading of two lighters, one Causeway Ferry and one Landing Craft Utility-2000, Landing Craft Utility-1600 or Logistics Support Vessel.

JMLS RO/RO Discharge Facility

✓ **JMLS Air Cushioned Vehicle Landing Platform (ACVLAP)**: When combined with the RRDF, the ACVLAP allows air-cushioned lighters to land and accept vehicles from the ship and deliver them ashore. The ACVLAP platform provides sufficient buoyancy and structural and deck strength to accept a Landing Craft Air Cushioned (LCAC), rolling stock, and cargo simultaneously. The ACVLAP can be configured to allow one LCAC to land on the deck and fly off the deck into the sea. The ACVLAP also provides for rolling stock to be driven between the RRDF, the ACVLAP, and an LCAC landed on the ACVLAP deck so that rolling stock can be positioned on the LCAC for transport.

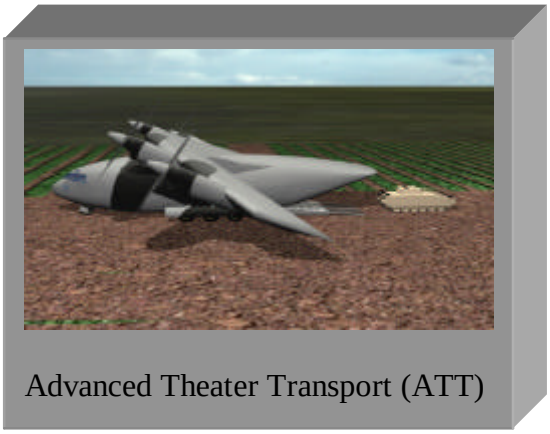
➢ **<u>Sea State 3 Crane:</u>** Current shipboard crane technology does not permit the crane operator to compensate easily for the pendulation (i.e., swinging) of a load suspended from a crane mounted on a ship, or the relative movement between the crane ship and the platform receiving the cargo. Above sea state 2, these problems become severe, especially for relatively inexperienced crane operators. To correct this problem, the Naval Sea Systems

Sea State 3 Crane System

Command is conducting an Advanced Technology Demonstration (ATD) on a new mechanical system called the Advanced Shipboard Crane Motion Control system. The ATD is intended to demonstrate shipboard crane pendulation motion control and will enable crane ship throughput of a minimum of 300 containers per day in sea state 3 or other conditions which cause the ship to roll. This enhanced capability will ensure that the JFC can close the force and commence or continue sustainment operations even during sea state 3 conditions.

Emerging and Notional Intra-Theater Airlift Alternatives:

- **Advanced Theater Transport (ATT):** The Boeing Company is currently developing a no-tail, widebody, tiltwing, super short take-off and landing (SSTOL) aircraft. It will be capable of carrying 60,000 pounds (30 tons) for 3,000 nautical miles (worldwide with aerial refueling), cruising at approximately 382 knots at 31,000 feet, and landing or taking off on a 750-foot unimproved landing site, such as a farm field (at 4,000 feet elevation and 95 degrees Fahrenheit) and shorter distances at sea level[30]. It can be operated by a crew of three. Other characteristics of the ATT are:

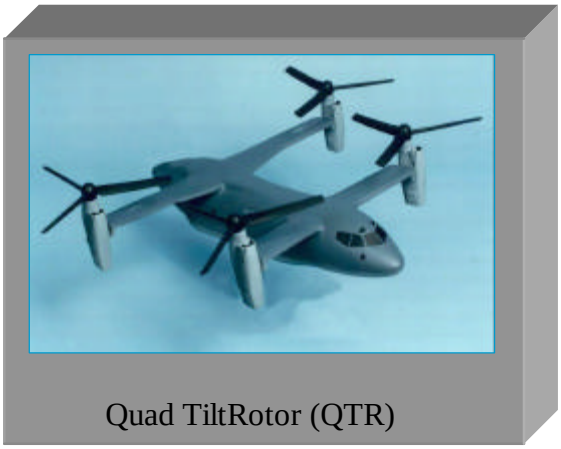

Advanced Theater Transport (ATT)

  - ✓ Can transport 100 paratroopers, or a combination of nine 463L pallets and 36 personnel.
  - ✓ Has an articulated cargo ramp that adjusts to all truckbed heights and can load and/or offload directly to bare truck beds or trailer floors without the need for rollers.
  - ✓ Has a retractable cargo handling system capable of self loading and unloading without the assistance of MHE (e.g., forklifts, K-Loaders, cranes). Can transport one fully loaded International Organization for Standardization (ISO) container, one palletized load system (PLS) truck and empty flatrack, one multiple launch rocket system (MLRS), one heavy expanded mobile tactical truck (HEMTT), five high mobility multipurpose wheeled vehicles (HMMWVs), one Patriot Missile System firing unit, one M-2/3 Bradley Infantry Fighting Vehicle, one Comanche helicopter, two Army next generation future combat systems (non-tactical lift), or a Rigid Inflatable Boat (RIB) with trailer, tow vehicle, and thirteen sea-air-land team (SEAL) members.
    - ✓ Makes a smaller footprint than the stretched versions of current intra-theater aircraft. This reduced footprint and shorter cycling time will result in more

[30] Advanced Theater Transport (ATT) briefing, The Boeing Company, undated.

ramp space being available during SD operations and will increase the maximum on ground (MOG) capability of airfields.

- **Quad TiltRotor (QTR):** Bell Helicopter is developing a Quad TiltRotor (QTR) vertical lift transport that is as large as a C-130. It is capable of carrying from 10 to 20 tons over distances from 1,000 to 2,000 nautical miles, cruising at 280 knots with a service ceiling of 22,000-25,000 feet, and landing vertically without the need for runways or airports. When using the short take-off and landing (STOL) capability, the QTR can take off and land in as little as 300 feet. The QTR can operate at night, in bad weather, and in icing conditions. With its air-to-air refueling capability, is self-deployable around the world. It has four V-22 rotors, engines, and transmissions mounted two each on forward and aft wings. It possesses twice the lift capacity of the V-22 and six times the internal cabin volume. The fuselage has an internal volume large enough to move cargo greater in size than the standard C-130.[31] Other characteristics of the QTR are:



Quad TiltRotor (QTR)

  - ✓ Can internally carry one 8X8X40 foot or two 8X8X20 foot ISO containers, eight 463L pallets, or three HMMWVs.
  - ✓ Can fly 1000 miles to resupply ships at sea with up to 30,000 pounds (15 tons), unload and load during flight deck operations, refuel, and return to base with 15,000 pounds. Not designed to go below deck.
  - ✓ Twenty-eight QTRs can support a Marine expeditionary brigade with 1,600 tons per day 200 miles inland.
  - ✓ Can transport 122 passengers, or 70 litters.
  - ✓ Has an external hook capable of lifting up to 30,000 pounds.
  - ✓ Uses common logistics equipment used by the C-130 and C-141 for loading and unloading.

  Because of its capability to vertically land on sea-based platforms (i.e., not requiring an arresting hook landing) being used as “floating islands” or ISBs outside the range of adversarial weapon systems and the extended operational reach provided by the QTR’s range and payload, forces could be deployed directly

[31] Introducing, The Quad TiltRotor VSTOL Transport: A Joint Common Lift Solution, Bell Helicopter White Paper, undated.

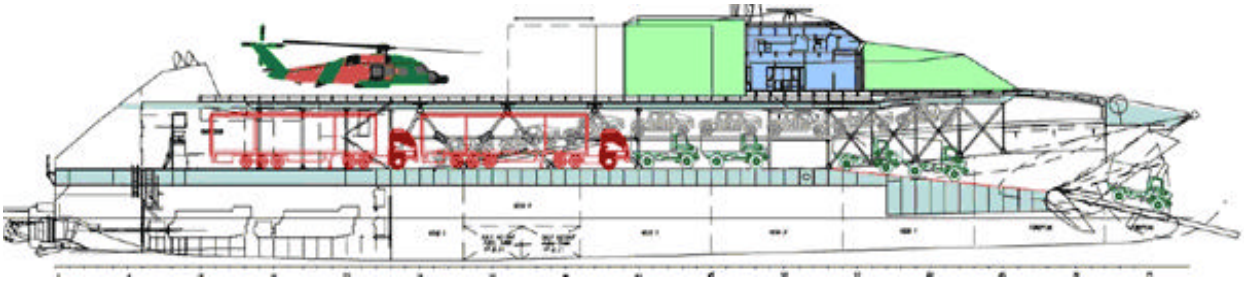
into the mission area and sustained from the same, or a different, sea based platform.

Emerging and Notional Intra-Theater Sealift Alternatives:

- **Theater Logistics Vessel (TLV):** The TLV will be a commercially designed vessel developed for the Army to use in providing intra-theater sealift and JLOTS support. To arrive in-theater along with HSS vessels and support their offloading, the TLV is being designed with a deployment range of 8,700 nautical miles without refueling, while operating at a service speed of 24 knots, and at 40+ knots will have a range of no less than 1,250 nautical miles. It will have a minimum of 15,000 square feet of useable deck space for RO/RO cargo and a cargo capacity of no less than 2,650 short tons.[32] The TLV will be approximately 300 feet long with a capability to globally self deploy and, once in theater, will relocate and resupply units directly from strategic sealift ships anchored in-stream, or the POD, while maintaining asset visibility over waterborne intra-theater cargo movements. The TLV will enable Dominant Maneuver by providing the JFC with the capability to bypass degraded or congested lines of communication, shorten main supply routes, and enhance his scheme of maneuver. It will receive RO/RO cargo from strategic ships by interfacing with JLOTS causeway system platforms currently under development, such as the JMLS. The JLOTS systems will be capable of operating in sea state 3 conditions, and the TLV will interface with the systems without the use of mooring lines, anchors, or other mechanical aids? which will **speed up operations** and conserve manpower. The TLV will transport equipment and sustainment to shore areas not accessible to strategic sealift ships. This capability will provide the JFC and logistics commanders an agile and responsive sealift platform with which to effect early entry and tactically relocate and sustain joint forces in forward areas. It will enable the supported CINC to close the force in the event of port denial, insufficient ports, or shallow draft ports. This vessel will allow the JFC to maneuver forces and sustainment in-theater from sea based support platforms and ISBs to forward areas, thereby extending his operational reach.

- **Fast Sealift Catamaran:** In June 1999, the Royal Australian Navy chartered a high-speed RO/RO passenger wave-piercing catamaran that they subsequently named the HMAS Jervis Bay (see graphic above). This is the first vessel of this type to be operated by any navy worldwide. The ship will concurrently carry 500 fully equipped soldiers, ten M113 Armored Personnel Carriers (APCs), and their sustainment. Without the soldiers, it can transport fifteen APCs or 867 passengers. It is operated by a crew of eighteen, has a service speed of 40 knots, and a range of up to 1,000 nautical miles. The ship is currently being used for the daily logistical support of the international force deployed in East Timor. It could be a fast power projection platform used to shuttle joint forces from the sanctuary of nearby ISBs to the JOA as well as conduct sustainment operations. Its technology should be examined for possible application in inter-theater platforms.

[32] Operational Requirements Document for the Theater Logistics Vessel (TLV) (Draft), U.S. Army Training and Doctrine Command, undated.



HMAS Jervis Bay

2.3 JV 2010 Desired Operational Capabilities

The Joint Vision Implementation Master Plan (JIMP) describes DOCs as being concept based statements of the operational capabilities required to satisfy a JFC's needs in 2010 and beyond and meet the 21st Century Challenge requirements. The following is a brief discussion of a representative sampling of the DOCs for this concept.

- **Advanced Planning and Decision Support Tools** - The JFC will be provided with advanced decision support tools that will allow him to aggregate, categorize, and organize information from various sources and display the information in a format conducive to his use.

- **Common Relevant Operational Picture** - Having all components of the JTF able to view a single common operational picture across all organizational boundaries will greatly enhance the JFC's ability to conduct RDO.

- **Alternatives to Bases and Fixed Ports in the JOA** - Using JLOTS and other capabilities will provide the JFC access to areas where there is no fixed port structure or the ports are inadequate. Using off-shore bases or ISBs will provide access to an area when overflight or basing rights are denied.

- **Heavy, Supersonic, and Ultra Large Airships Inter-Theater Airlift; Fast Inter-Theater Sealift** - Heavier airlift platforms and faster sealift platforms will give the JFC the capability to build more combat power in the JOA in a shorter period of time.

- **Intra-Theater SSTOL** - SSTOL will give the JFC the capability to redeploy forces and sustainment from ISBs to the JOA, and reposition forces and sustainment within the JOA using short unimproved runways, roads, and farm fields.

- **Total Asset Visibility of Personnel and Sustainment** - The JFC will be able to track the movement from origin to destination and divert assets to different locations based upon changes in the operational situation.

2.4 Relationship to Other Concepts

SD is a functional concept that provides strategic deployment planning and execution context and focus for many of the major concepts in US Joint Forces Command's Campaign Plan 00 (CPLAN 00). These include "Rapid Decisive Operations," which is an overarching integrating concept that provides a "frame of reference" and focus for SD and other functional concepts: "Attack Operations Against Critical Mobile Targets," "Adaptive Joint Command and Control," "Common Relevant Operational Picture," "Information Operations," "Focused Logistics: Enabling Early Decisive Operations," "Forcible Entry Operations," and "Joint Interactive Planning." SD will have a very significant impact on joint forces because of their need to deploy to conduct RDO, and consequently must be considered in the development of each of the concepts identified in US Joint Forces Command's CPLAN 00. From a SD perspective, only some of these concepts have direct relevance to the SD concept and its experimentation plan.

- **"Rapid Decisive Operations, (RDO)"** provides the operational focus for SD and the framework for determining which *JV 2010* features will be employed. Within the logistics context RDO highlights those areas where *JV 2010* strategic deployment DOCs and other DOCs will enhance the effectiveness of the joint force.

- **"Attack Operations against Critical Mobile Targets, (AOACMT)"** provides a protective "umbrella" under which strategic deployment operations and logistics nodes in the JOA will be protected while deploying forces and sustainment.

- **"Forcible Entry Operations, (FEO)"** is a follow-on operation conducted if RDO fails to achieve its objectives. It relies more heavily on the use of force (rather than the threat of force) by focusing joint asymmetric capabilities on the adversary's centers of gravity while protecting its own critical vulnerabilities. It emphasizes the use of mobility, agility, maneuver, and firepower, to achieve its objectives.

- **"Focused Logistics: Enabling Early Decisive Operations, (FLEEDO)"** provides complementary support to the capabilities of the SD concept. While the focus of the SD concept is on "getting the forces there", the FLEEDO concept focuses on the vital aspects of sustaining the force once it is deployed. The SD of forces is of limited value if they cannot be sustained after they are deployed? hence the importance of the FLEEDO concept.

- **"Adaptive Joint Command and Control, (AJC2)"** will provide insight into how to integrate the total strategic deployment process within the joint command structure by providing organizational alternatives for Joint Theater Logistics Management in the theater.

- **"Common Relevant Operational Picture, (CROP)"** will support the SD concept by ensuring that relevant deployment and related logistics information is provided to the JTF and becomes part of the larger joint information picture. CROP will allow deployment system users to obtain a common view of the status of sea, air, and CONUS land transportation assets in the Defense Transportation System. It will provide visibility over the deployment flow of forces and sustainment from point of origin to destination and a capability to divert forces and sustainment as the operational situation requires. It will also provide near real-time reliable and assured communications connectivity to ensure the availability of deployment information to deployment system users at the time it is needed.

- **"Joint Interactive Planning, (JIP)"** will provide insights into the use of interactive, simultaneous parallel planning, a capability that will influence and enhance SD in all phases of the deployment process. It will also provide insight on the collaborative use of non-military sources of information.

2.5 Key Issues for Experimentation

The SD experimentation begins with the development of the white paper in 2000 and proceeds to a series of leveraged events and seminars culminating in 2004 with the capstone event? the major joint integrating experiment (MJIE). The SD concept will leverage events such as Focused Logistics Wargame (FLOW) 01, Aerospace Future Capabilities Wargame, Technology Symposium, and other events to development and further refine the concept.

Experimentation will be conducted within the context of, and focus on, the four major sections of the concept: predeployment activities; movement to and activities at the POE; movement to the POD; and JRSOI activities, and the results of experimentation will be used to refine and/or refocus the concept. As the concept matures and becomes more robust and the Baseline Collective Assessment (BCA) is completed, additional candidate experimentation events will be identified for leveraging. Some theorize that deployment would be enhanced if ground units were self-deploying, eliminating the need to position and load strategic lift. Modeling and simulation could be used to determine the merits of this idea for Army and other Service units that cannot deploy themselves. There may be instances in RDO where this concept shows merit. The logistics implication of such a development is that time would be saved and flexibility enhanced in the pre-deployment phase. Modeling and simulation could determine if self-deploying units could eliminate the requirement to position and load strategic lift aircraft.

The following are some of the questions the SD concept may address:

- Has the initial and follow-on logistics force been tailored to reduce lift requirements and minimize the footprint in the JOA?

- Are deployment planning and execution AISs meeting JFCs' and users' needs?

- Do warfighters and logisticians at all levels have access to required deployment information during deployment planning and execution activities?

- Can the visibility of units, equipment, and accompanying sustainment be tracked from origin to destination to allow the JFC to divert assets?

- What is the correct mix of airlift and sealift assets needed to maximize the amount of combat power that can be projected to the JOA?

- What is the impact of Ultra Large Airships on deployment operations?

- What is the impact of high-speed sealift platforms on deployment operations?

- What is the impact of new intra-theater airlift platforms (e.g., ATT, Quad TiltRotor) on deployments from ISBs to the JOA?

- What is the impact of new intra-theater sealift platforms (e.g., TLV) on deployments from ISBs to the JOA?

- Have actions been taken by the operators of common-user air and sea lift assets to reduce their organic lift requirements to free up lift assets?

- How do we ensure that national defense features (e.g. length, width and ceiling heights of the cargo bay, ramp capacity, loading and unloading methods, range and payload, cargo door location, height and width, etc.), are considered when designing and developing combat equipment and airlift and sealift platforms?

- Has transshipment (i.e., the transfer of materiel between modes of conveyance) been minimized to expedite force closure?

- Are ISBs used to reduce the logistics footprint in the JOA?

- Is it feasible to use prepositioning platforms as floating ISBs?

- Does the JRSOI capability meet JFC needs?

- How can JRSOI activities be reduced or eliminated?

- After offloading of prepositioned materiel, can prepositioning platforms be used for sustainment support?

2.6 Limitations

Limitations that currently impair the conduct of SD operations are:

- Transportation assets available.

- Speed, range, and payload of transportation platforms.
- Physical characteristics of military equipment to be transported on military, CRAF, and VISA transportation platforms.
- Political will to make required changes.
- Fiscal constraints.
- Resistance to change.
- Security “firewalls” between classified and unclassified portions of the same information system (e.g., GTN).
- Time-distance factors from origin to destination.
- Infrastructure in the JOA.

Chapter Three
DOTMLP Implications

3.0 Introduction

(in progress)

3.1 Doctrine

This concept is founded in the joint doctrine represented by several publications including those listed below. Joint experimentation will identify implications that will lead to recommendations for change to joint and Service doctrine.

- Joint Publication 3-35, Joint Deployment and Redeployment Operations.
- Joint Publication 4-01, Joint Doctrine for the Defense Transportation System.
- Joint Publication 4-01.1, Joint Tactics, Techniques, and Procedures for Airlift support to Joint Operations.
- Joint Publication 4-01.2, Joint Tactics, Techniques, and Procedures for Sealift support to Joint Operations.
- Joint Publication 4-01.6, Joint Tactics, Techniques, and Procedures for Joint Logistics Over-the-Shore (JLOTS).
- Joint Publication, 4-01.8, Joint Tactics, Techniques, and Procedures for Reception, Staging, Onward Movement, and Reception (Draft).

APPENDIX A

BASELINE COLLECTIVE ASSESSMENT SUMMARY

(TO BE PUBLISHED)

(INTENTIONALLY BLANK)

APPENDIX B

EXPERIMENTATION STRATEGY

(TO BE PUBLISHED)

(INTENTIONALLY BLANK)

APPENDIX C

ENABLING TECHNOLOGIES

(TO BE PUBLISHED)

(INTENTIONALLY BLANK)

APPENDIX D

VULNERABILITY ASSESSMENT

(TO BE PUBLISHED)

(INTENTIONALLY BLANK)

APPENDIX E

DESIRED OPERATIONAL CAPABILITIES

DOC Number: FL-05 (Includes FL-34; DM 3, 30, 31; IS-78)	**Title**: Provide fully enabled mobility system to optimize rapid joint force projection, delivery and hand-off of forces and sustainment assets worldwide.

DOC Description (General Summary): Improves the joint deployment and distribution process. Provides a fully integrated process to deploy forces and sustainment worldwide. Includes concepts, doctrine, technological/materiel and process changes necessary to more effectively and efficiently employ transportation assets. Also provides a flexible process to receive and transfer units and support to the responsible tactical commander. Depending on the extent forces have been tailored, equipped, and loaded prior to deployment the traditional steps of reception, staging, onward movement, and integration may be streamlined or eliminated. May be conducted independent of fixed infrastructure. Incorporates modernized and tailorable prepositioned equipment that is strategically and operationally flexible.

Requires increased command and control,. Requires improved communications capability, command and control, battlespace awareness, and planning, information collection systems, and decision support tools. Resulting process will link all elements/nodes of deployment and distribution system together to provide a seamless capability to plan and execute movement of forces and sustainment from origin to destination.

Task: Transportation management

JV 2010 Differences:

- Modularity/expeditionary
- Force tailoring
- Improved planning
- Predictive anticipatory
- Dynamic replanning
- Collaborative (simultaneous)
- Rapid/responsive/flexible
- Efficient asset utilization/increased throughput
- Total asset visibility (transportation and cargo)
- Reduced logistics footprint
- Streamlined JRSOI

CA Sponsor: Focused Logistics

Organization Address: The Joint Staff, J-4, Readiness and Requirements, The Pentagon, Rm. 2D831, Washington, DC 20318-4000

Tel (DSN): 225-8540 **Tel (Coml):** (703) 695-7773
FAX (DSN): 227-2359 **FAX (Coml):** (703) 697-2359

E-Mail Address: J4focusedlogistics@js.pentagon.mil

Applicable Challenge(s):

- Joint Deployment/Rapid Distribution
- Agile Infrastructure
- Information Fusion

Core Task(s):

- Mobility
- Information Transport and Processing

- C2

Subordinate Tasks:

- Determine transportation infrastructure and resources. (SN 1.1)
- Develop conceptual changes.
- Develop doctrine for deployment, distribution, redeployment and JRSOI.
- Improve joint processes.
- Improve joint training.
- Integrate deployment systems. (SN 1.2.1)
- Tailor joint forces for deployment. (ST 7.1.3)
- Provide command and control over mobilized units and individuals. (SN 6.7)
- Provide terminal operations. (SN 1.2.3)
- Provide theater strategic reception. (ST 1.1.2.1)
- Provide theater strategic staging. (ST 1.1.2.2)
- Provide onward movement in the AOR. (ST 1.1.2.3)
- Conduct rapid staging and movement. (DM-30)
- Provide theater strategic integration of deploying forces. (ST 1.1.2.1)
- Rapidly integrate forces arriving in joint operations area. (DM-03)
- Conduct synchronized coalition and RC integration. (DM-31)
- Conduct theater of operations/JOA reception, staging, onward movement, and integration (RSOI). (OP 1.1.3)
- Synchronize/integrate operations. (OP 5.4.4)
- Interact with integrated deployment systems.
- Maximize leverage of C4ISR

UJTL Ref No: SN1	**UJTL Description**: Conduct Strategic Deployment and Redeployment.

Task Conditions:

C 2.0 Military Environment

- C 2.2.5.2 Modern Information & Intelligence Processing Systems – Abundant (widely distributed throughout the force)
- C 2.2.5.3 Military Systems Reliability - High (few breakdowns and those fixed with out major effort)
- C 2.2.5.4 Military System Maturity - Evolved (numerous units equipped with new systems; follow on systems are in development)
- C 2.2.5.6 Interoperability - Range from Full to Some
- C 2.3.1.1 Joint Staff Integration - Full
- C 2.3.1.2 Multinational Integration - Range from Full to Poor
- C 2.3.1.4 Pre-Existing Command - No (ad hoc [logistics]) [OCONUS]
- C 2.3.1.6 Communications Connectivity - Continuous (operates with almost no interruptions)
- C 2.3.1.8 Information Exchange - Restricted [to allies and coalition partners]
- C 2.3.1.9 Information Volume - High (50 inputs per hour [containing highly consistent information])
- C 2. 5.2 Lift assets - Robust (as planned)
- C 2. 5.3 En Route Support - Robust (as planned)
- C 2.5.4.1 Reception Facilities - Robust (as planned) to Little or No

C 3.0 Civil Environment

- C 3.1.1.2 Congressional Support - Full (resolution passed; non-partisan support)
- C 3.1.1.3 Interdepartmental/Interagency Relationships - Strong (fully cooperative)
- C 3.1.3 NCA Decisions - Clear and Unrestrictive
- C 3.1.3.1 Number of Crises - Moderate (two)
- C 3.1.3.3 Mobilization Level – Partial
- C 3.3.6.1 Transportation Infrastructure – Extensive
- C 3.3.6.2 Telecommunications Infrastructure - Extensive (strong modern capability)

Criteria for Measurement (and Existing Standards if Known):

- Percent - Of approved projects backlogged for funding. (SN 7.2 -M1)
- Years - To fielding from initiation of R&D program. (SN 7.2 - 12)
- Instances - Of problems (constraints) in timely development of required and validated systems and technologies. (SN 7.2.2 -M3)
- Instances - Of coordination problems (constraints) to effective and efficient planning and use of Joint testing (vice Service peculiar testing). (SN 7.2.4 - M1)
- Line items - Backlogged. (SN 4 - M1)
- Percent - Of planned sustainment delivered to theater during operations. (SN 4 - M2)
- Tons - Of backlogged support requirements. (SN 4 - M5)
- Percent - Accuracy in generated movement information for GTN. (SN 1.2.1 - M14)
- Percent - Completeness in generated movement information for GTN. (SN 1.2.1 - M15)
- Percent - Of ADP systems interface or have workarounds. (SN 1.2.1 - M18)
- Percent - Of generated movement information for GTN current. (SN 1.2.1 - M21)
- Percent - Of units [and sustainment] moved by LAD and RDD (SN 1 -M3)

Critical Performance Measure: Percent - Of validated requirements (ULNs [and sustainment) closed within supported commander's CRD/RDD window. (SN 1.2.5 -M7)

Means:

- Improved strategic and intratheater lift
- Improved Communications
- Improved information collection systems
- Joint publications and doctrine
- SS3 JLOTS
- Integrated deployment systems
- Smart filters and decision support tools
- Changed deployment/redeployment doctrine
- Integrated network of data
- IS-78: Provide Total Asset Visibility of all passengers and cargo moving in the Defense Transportation System - including in-transit locations - as part of an integrated transportation system architecture.

Most Demanding AOR, Mission and Scenario for Assessment (and Rationale): Concurrent posture of engagement and multiple small scale contingencies while entering into two major theater wars will place the most stress on executing deployment and distribution processes.

Assessment Strategy (Suggested Events, Primary and Validating):

1. Develop strategy and process changes to provide a fully enabled mobility system that optimizes delivery and hand-off of forces and sustainment assets worldwide.
2. Validate strategy and process changes.
3. Conduct up-front analyses, review current studies – determine baseline.
4. Initial assessment will focus on mapping "as is' and 'to be' deployment and distribution processes. Concurrently baseline doctrine will be established for the 'as is' process.
5. Subsequent events to asses excursions from the baseline include:
   - Quarterly deployment process improvement conferences.
   - MRS-05 (End-to-end study, includes Intratheater Lift Analysis, etc.))
   - Biennial Focused Logistics Wargame 2010 (FLOW).
   - JLOTS wargame within FLOW.
   - ACOM JV 2010 master assessment events.
   - Strategic Airlift AMX Battlefield Distribution.
   - Deployment and re-deployment doctrine
   - Integrated deployment systems
   - JLOTS SS3 Causeway System ACTD
   - JLOTS Rapidly Installed Breakwater Summer Test
   - JLOTS Rapidly Installed Breakwater ATD

<table>
<tr><td colspan="2">
JLOTS SS3 Crane ATD
6. Improved joint training
7. Improved joint practices
8. Acquire resources and implement.
</td></tr>
<tr><td colspan="2">Hypotheses: A fully enabled mobility system will improve delivery of required forces and sustainment worldwide.</td></tr>
<tr><td colspan="2">Other Affected JV 2010 Coordinating Authorities: Command and Control, Information Superiority</td></tr>
<tr><td>Other CA #1 Address: J-6
Tel (DSN):
E-Mail:</td><td>Interest/Connection: Information aspects</td></tr>
<tr><td>Other CA #2 Address: J-7/J-3
Tel (DSN):
E-Mail:</td><td>Interest/Connection: C2 aspects</td></tr>
<tr><td colspan="2">Remarks: This Focused Logistics desired operational capability requires J-7/J-3 action to implement a fully integrated command and control system and J-6 action to establish a robust communications infrastructure.

<u>Key Words</u>:
Decision support
Deployment/redeployment
Deployment process
Asset utilization
Asset visibility</td></tr>
<tr><td colspan="2">Last update 8/25//98</td></tr>
</table>

DOC Number: FL-06 (Includes. FL-12, DM-02,25; FSD-20)	**Title**: Deployment and distribution of the required forces and sustainment at the place and time required.

DOC Description (General Summary): Provides assets to deploy and distribute forces and sustainment worldwide. Includes air and sea lift assets, afloat prepositioning assets, and en-route support. Effective efficient use of assets requires improved deployment and distribution processes, communications, command and control, information systems, and decision support tools.

Task: Transportation operations

JV 2010 Differences:

- More capable ground, air, and sea lift
- Worldwide access
- Rapid deployment and distribution
- Improved planning and dynamic replanning
- Predictive, anticipatory logistics
- Increased tactical flexibility with near perfect knowledge of friendly forces

CA Sponsor: Focused Logistics

Organization Address: The Joint Staff, J-4, Readiness and Requirements, The Pentagon, Rm. 2D831, Washington, DC 20318-4000

Tel (DSN): 225-8540 **Tel (Coml):** (703) 695-7773
FAX (DSN): 227-2359 **FAX (Coml):** (703) 697-2359

E-Mail Address: J4focusedlogistics@js.pentagon.mil

Applicable Challenge(s):

- Joint Deployment/Rapid Distribution (primary)
- Multinational Logistics
- Agile Infrastructure
- Information Fusion

Core Task(s):

- Mobility
- Sustainment
- Information Transport and Processing

Subordinate Tasks:

- Provide [mobility] forces and mobility assets. (SN 1.2.2)
- Provide terminal operations. (SN 1.2.3)
- Provide movement to POE and port support services. (SN 1.2.4)
- Move forces [and sustainment] … from POE to POD. (SN 1.2.5)
- Deploy forces rapidly from dispersed locations (DM-02)
- Provide Global Patient Movement. (SN 1.2.8)
- Backhaul personnel and equipment from theater. (SN 1.2.6)
- Coordinate global strategic refueling. (SN 1.2.7)
- Provide onward movement in the AOR. (ST 1.1.2.3)
- Interact with integrated deployment systems.
- Maximize leverage of C4ISR
- Air refueling support

UJTL Ref No:	**UJTL Description**:
SN1.2	• Conduct Deployment and Redeployment.

ST 4.3	• Distribute Supplies/Services for Theater Campaign and COMMZ.

Task Conditions:

C 2.0 Military Environment

- C 2.2.5.2 Modern Information & Intelligence Processing Systems – Abundant (widely distributed throughout the force)
- C 2.2.5.3 Military Systems Reliability - High (few breakdowns and those fixed with out major effort)
- C 2.2.5.4 Military System Maturity - Evolved (numerous units equipped with new systems; follow on systems are in development)
- C 2.2.5.6 Interoperability - Range from Full to Some
- C 2.3.1.1 Joint Staff Integration - Full
- C 2.3.1.2 Multinational Integration - Range from Full to Poor
- C 2.3.1.4 Pre-Existing Command - No (ad hoc [logistics]) [OCONUS]
- C 2.3.1.6 Communications Connectivity - Continuous (operates with almost no interruptions)
- C 2.3.1.8 Information Exchange - Restricted [to allies and coalition partners]
- C 2.3.1.9 Information Volume - High (50 inputs per hour [containing highly consistent information])
- C 2. 5.2 Lift assets - Robust (as planned)
- C 2. 5.3 En Route Support - Robust (as planned)
- C 2.5.4.1 Reception Facilities - Robust (as planned) to Little or No

C 3.0 Civil Environment

- C 3.1.1.2 Congressional Support - Full (resolution passed; non-partisan support)
- C 3.1.1.3 Interdepartmental/Interagency Relationships - Strong (fully cooperative)
- C 3.1.3 NCA Decisions - Clear and Unrestrictive
- C 3.1.3.1 Number of Crises - Moderate (two)
- C 3.1.3.3 Mobilization Level – Partial
- C 3.3.6.1 Transportation Infrastructure – Extensive
- C 3.3.6.2 Telecommunications Infrastructure - Extensive (strong modern capability)

Criteria for Measurement (and Existing Standards if Known):

- Percent - Of approved projects backlogged for funding. (SN 7.2 -M1)
- Years - To fielding from initiation of R&D program. (SN 7.2 - 12)
- Instances - Of problems (constraints) in timely development of required and validated systems and technologies. (SN 7.2.2 -M3)
- Instances - Of coordination problems (constraints) to effective and efficient planning and use of Joint testing (vice Service peculiar testing). (SN 7.2.4 - M1)
- Line items - Backlogged. (SN 4 - M1)
- Percent - Of planned sustainment delivered to theater during operations. (SN 4 - M2)
- Tons - Of backlogged support requirements. (SN 4 - M5)
- Percent - Of cargo closed before JFC EAD without any place to offload or store. (SN 1.2.5 - M2)
- Percent - Accuracy in generated movement information for GTN. (SN 1.2.1 - M14)
- Percent - Completeness in generated movement information for GTN. (SN 1.2.1 - M15)
- Percent - Of ADP systems interface or have workarounds. (SN 1.2.1 - M18)
- Percent - Of generated movement information for GTN current. (SN 1.2.1 - M21)
- Percent - Of strategic mobility assets and support assets, in place to move forces IAW validated TPFDD. (SN 1.2.5 -M5)
- Percent - Of units moved by RDD (SN 1 -M3)

- **Critical Performance Measure:** Percent of units and tons of required sustainment supplies arrived at destination by TPFDD LAD/RDD.

Means:

- Improved strategic and intratheater lift (DM-25)

- Integrated C2
- High sea state operations
-
- Smart filters and joint support tools
- Integrated database of information
-
- FSD-20 Direct delivery CONUS to Combat/End User.

Most Demanding AOR, Mission and Scenario for Assessment (and Rationale): Concurrent posture of engagement and multiple small scale contingencies while entering into two major theater wars will place the most stress on sustainment movements and delivery.

Assessment Strategy (Suggested Events, Primary and Validating):

1. Develop a strategy and architecture for deployment and distribution of the required forces and sustainment.
2. Validate strategy and architecture.
3. Conduct up-front analyses, review current studies – determine baseline.
4. Performance of current and programmed assets will be used as a baseline for alternative lift platforms, prepositioning alternatives, and support strategies.
5. Thorough utilization of appropriate models and simulations.
6. Consider aspects of Joint doctrine and publications, strategic airlift, prepositioning, surge sea-lift, SS3 JLOTS, and integrated deployment systems.
7. Known assessment events are:
   - MRS-05 (End-to-end study, includes Intratheater Lift Analysis, etc.)
   - Biennial Focused Logistics Wargame 2010 (FLOW).
   - ACOM JV 2010 master assessment events
   - Strategic Airlift AMX Battlefield Distribution
8. Acquire resources and implement.

Hypotheses: Deployment and distribution of the required sustainment at the place and time required will improve the combat commander's ability to perform his mission.

Other Affected JV 2010 Coordinating Authorities: Information Superiority, Command and Control

Other CA #1 Address: J-6 **Tel (DSN):** **E-Mail**:	**Interest/Connection:** Information aspects
Other CA #2 Address J-7/J-3 **Tel (DSN):** **E-Mail**:	**Interest/Connection**: C2 aspects

Remarks: This Focused Logistics desired operational capability requires J-7/J-3 action to implement a fully integrated command and control system and J-6 action to establish a robust communications infrastructure for effective efficient use of assets.

Key Words:

- Sea state 3
- JLOTS
- C-17
- LMSR (Large Medium Speed RO/RO)
- High speed sea-lift (HSS)
- Strategic sea-lift
- Offshore petroleum discharge system (OPDS)
- Mobile off-shore base (MOB)

Last update 8/25//98

DOC Number: FL-07	**Title**: Support rapid force maneuver within the joint operations area.

DOC Description (General Summary): Provides a fully integrated capability to sustain and support maneuver in the battlespace . Focuses on the alternative uses of transportation assets, including strategic assets and JLOTS, to support maneuver and sustainment of widely dispersed forces within a nonlinear battlespace. Requires transportation assets and improved communications, command and control, information systems, and decision support tools. Leverages information, logistics and transportation technologies to plan and execute support of joint operations. Integrates support to provide rapid crisis response, tracking and shifting assets while enroute to deliver tailored logistics packages with minimal footprint and early initiation of sustainment directly at the strategic, operational and tactical levels of operation.

Task: Intratheater deployment

JV 2010 Differences:

- Increased tactical flexibility
- Use of strategic lift for maneuver
- Use of JLOTS assets to support maneuver
- Ability to support nonlinear battlespace operations
- Conduct operations independent of fixed infrastructure

CA Sponsor: Focused Logistics

Organization Address: The Joint Staff, J-4, Readiness and Requirements, The Pentagon, Rm. 2D831, Washington, DC 20318-4000

Tel (DSN): 225-8540 **Tel (Coml):** (703) 695-7773
FAX (DSN): 227-2359 **FAX (Coml):** (703) 697-2359

E-Mail Address: J4focusedlogistics@js.pentagon.mil

Applicable Challenge(s):

- Joint Deployment/Rapid Distribution (primary)
- Multinational Logistics
- Agile Infrastructure
- Joint Theater Logistics Management
- Information Fusion

Core Task(s):

- Maneuver
- Mobility
- Information Transport and Processing

Subordinate Tasks:

- Develop theater distribution doctrine.
- Process requests for forces to be deployed. (ST 1.1.1)
- Conduct intratheater deployment of forces. (ST 1.1.3)
- Field adequate intratheater lift.
- Provide intratheater refueling. (ST 1.1.5)
- Coordinate support for forces in AOR. (ST 4.2)
- Maximize leverage of C4ISR

UJTL Ref No: ST 1.1	**UJTL Description**: Conduct Intratheater Strategic Deployment.

Task Conditions:

- C 2.2.5.2 Modern Information & Intelligence Processing Systems – Abundant (widely distributed throughout

the force)
- C 2.2.5.3 Military Systems Reliability - High (few breakdowns and those fixed with out major effort)
- C 2.2.5.4 Military System Maturity - Evolved (numerous units equipped with new systems; follow on systems are in development)
- C 2.2.5.6 Interoperability - Range from Full to Some
- C 2.3.1.1 Joint Staff Integration - Full
- C 2.3.1.2 Multinational Integration - Range from Full to Poor
- C 2.3.1.4 Pre-Existing Command - No (ad hoc [logistics]) [OCONUS]
- C 2.3.1.6 Communications Connectivity - Continuous (operates with almost no interruptions)
- C 2.3.1.8 Information Exchange - Restricted [to allies and coalition partners]
- C 2.3.1.9 Information Volume - High (50 inputs per hour [containing highly consistent information])
- C 2. 5.2 Lift assets - Robust (as planned)
- C 2. 5.3 En Route Support - Robust (as planned)
- C 2.5.4.1 Reception Facilities - Robust (as planned) to Little or No

Criteria for Measurement (and Existing Standards if Known):
- Days - To assemble airlift for strategic intratheater deployment of forces. (ST 1.1 - M1)
- Days - To assemble sealift for strategic intratheater deployment of forces. (ST 1.1 - M2)
- Minutes - To locate units during intratheater strategic deployment. (ST 1.1 - M5)
- Percent - Of intratheater airlift requirements considered in deployment planning. (ST 1.1 - M7)
- Percent - Of lift requested actually used. (ST 1.1 - M8)

Critical Performance Measure: Percent - Of units closed within Support Command/RDD. (ST 1.1 - M10)

Means:
- Integrated C2
- Airlift
- STOL
- Sealift
- Airdrop
- All terrain cargo vehicle
- SS3 JLOTS
- High speed lighters
- Smart filters and joint decision support tools
- Seabasing
- Deployment and re-deployment doctrine
- Integrated deployment/redeployment systems

Most Demanding AOR, Mission and Scenario for Assessment (and Rationale): Concurrent posture of engagement and multiple small scale contingencies while entering into two major theater wars will place the most stress on assets available for intertheater and intratheater force movements.

Assessment Strategy (Suggested Events, Primary and Validating):
1. Develop a strategy and architecture for deployment and distribution of the required forces and sustainment.
2. Validate strategy and architecture.
3. Evaluate baseline capability of current and programmed assets to maneuver and sustain widely dispersed forces in a nonlinear battlespace.
4. Conduct appropriate modeling and simulations.
5. Conduct excursions using alternative platforms, rules of use, and strategies.
6. Known assessment events are:

- MRS-05 (End-to-end study, includes Intratheater Lift Analysis, etc.)
  - Biennial Focused Logistics Wargame 2010 (FLOW).
  - JLOTS wargame within FLOW

- ACOM JV 2010 master assessment events.
- Strategic Airlift AMX Battlefield Distribution

Hypotheses: Sustainment of or supporting rapid force maneuver within the battlespace will improve the operational commander's ability to perform his mission.

Other Affected JV 2010 Coordinating Authorities: Information Superiority, Command and Control

Other CA #1 Address: J-6 **Tel (DSN):** **E-Mail**:	**Interest/Connection:** Information aspects.
Other CA #2 Address: J-7/J-3 **Tel (DSN):** **E-Mail**:	**Interest/Connection**: C2 aspects.

Remarks: This Focused Logistics desired operational capability requires J-7/J-3 action to implement a fully integrated command and control system and J-6 action to establish a robust communications infrastructure for effective efficient use of assets.

Key Words:

- Littoral operations
- VSTOL
- STOL
- JLOTS
- Maneuver
- High speed sealift
- LMSR
- Seabasing
- Airdrop
- SS3
- OPDS
- Nonlinear
- Linear
- Intratheater lift
- Sustainment
- Resupply
- C-17

Last update 8/25//98

DOC Number: FL-01	**Title**: Provide unimpeded access to operational and logistics information for all who need it.

DOC Description (General Summary): Provides an operating architecture that allows any user access to operational and logistics data worldwide from a single terminal. Includes logistics policies, procedures, protocols, standards, access control, and security. Will result in better information and improved interoperability. Requires a reliable, robust interactive command and control network that links, operational and tactical combat and support forces information systems. It relies on a communications backbone with redundant communications hardware, software, links, redundancy, survivability, and maintenance. Architecture will allow support activities access to commanders' direction, orders, and execution status. It will also allow commanders access to support requirements, capabilities, and status. Information fusion architecture and information superiority infrastructure will provide the means for interoperability "across and between" logistics and operational functions, and expanded availability of logistics information to commanders and their staffs. This DOC conceptualizes the foundation or "operating environment" for information fusion. DOC FL-04 "Provide timely and accurate enhanced asset visibility, control, and management" depicts the fusion of logistics applications into powerful predictive decision support and execution tools.

Task: Have access to operational and logistics information.

JV 2010 Differences:

- Better information - timely, accurate, complete
- Manipulated data – smart filters
- Improved information interoperability of all aspects of logistics
- Integrated with operational information to provide near perfect knowledge of logistics status of friendly forces
- Real time
- Interactive
- Robust
- Protected information
- Always available to authorized users

CA Sponsor: Focused Logistics

Organization Address: The Joint Staff, J-4, Readiness and Requirements, The Pentagon, Rm. 2D831, Washington, DC 20318-4000

Tel (DSN): 225-8540 **Tel (Coml):** (703) 695-7773
FAX (DSN): 227-2359 **FAX (Coml):** (703) 697-2359

E-Mail Address: J4focusedlogistics@js.pentagon.mil

Applicable Challenge(s):

- Information Fusion (primary)
- Joint Deployment/Rapid Distribution
- Force Health Protection
- Multinational Logistics
- Agile Infrastructure
- Joint Theater Logistics Management

Core Task(s):

- C2
- Mobility
- Sustainment
- Information Transport and Processing

Subordinate Tasks:

- Establish reliable, real-time, secure communications between support forces and combat commanders.

- Synchronize the exchange of command and control and support information among operational, and tactical level organizations.
- Manage theater C4 system for communicating strategic orders and information. (SN 5.1.2)
- Manage means of communicating operational information. (OP 5.1.2)
- Communicate operational information. (OP 5.1.1)
- Interact with integrated command and control system.
- Maximize leverage of C4ISR
- Share information/data with coalition/friendly nations within limitations imposed by various directives.

Provide visibility of US industrial capability for medical supplies and on-hand stocks.

UJTL Ref No:	**UJTL Description**:
• OP 5.4 • TA 5	• Command Subordinate Operational Forces. • Exercise Command and Control.

Task Conditions:

- C 2.2.5.2 Modern Information & Intelligence Processing Systems – Abundant (widely distributed throughout the force)
- C 2.2.5.3 Military Systems Reliability - High (few breakdowns and those fixed with out major effort)
- C 2.2.5.4 Military System Maturity - Evolved (numerous units equipped with new systems; follow on systems are in development)
- C 2.2.5.6 Interoperability - Range from Full to Some
- C 2.2.5.7 Military Force Relationships - Range from Strong to Poor
- C 2.3.1.1 Joint Staff Integration - Range from Full to Poor
- C 2.3.1.2 Multinational Integration - Range from Full to Poor
- C 2.3.1.3 Staff Expertise - Limited (staff lacks skill in working together or lacks knowledge of assigned forces[logistics])
- C 2.3.1.4 Pre-Existing Command - No (ad hoc [logistics])
- C 2.3.1.6 Communications Connectivity - Continuous (operates with almost no interruptions)
- C 2.3.1.8 Information Exchange - Restricted [to allies and coalition partners]
- C 2.3.1.9 Information Volume - High (50 inputs per hour [containing highly consistent information])
- C 2.3.2.4 Component Headquarters Location – Separate

Criteria for Measurement (and Existing Standards if Known):

- Percent - Of approved projects backlogged for funding. (SN 7.2 -M1)
- Percent - Of joint force classified systems can be networked. (ST 5.1.2 -M15)
- Years - To fielding from initiation of R&D program. (SN 7.2 - 12)
- Instances - Of problems (constraints) in timely development of required and validated systems and technologies. (SN 7.2.2 -M3)
- Years - For Advanced Concept Technology Demonstrations (ACTDs) to enter production. (SN 7.2.3 - M3)
- Years - To progress from concept exploration through EMD and production. (SN 7.2.3 - M12)
- Instances - Of coordination problems (constraints) to effective and efficient planning and use of Joint testing (vice Service peculiar testing). (SN 7.2.4 - M1)
- Months - That program is held up for testing. (SN 7.2.4 - M16)

Critical Performance Measure: Yes/No - During planning and execution no data transfer between networked stations is responsible for a supporting command failing to meet a request/requirement. (SN 5.1.1 - M11)

Means:

- Multi-level database access and security
- Integrated network of data

Most Demanding AOR, Mission and Scenario for Assessment (and Rationale): Concurrent posture of engagement and multiple small scale contingencies while entering into a dual major theater war will place the most stress on exchanging large volumes of information among a variety of systems.

Assessment Strategy (Suggested Events, Primary and Validating):

1. Develop a strategy and architecture for exchanging command and control and support information among organizations at multiple levels.
2. Validate strategy and architecture.
3. Conduct up-front analyses, review current studies – determine baseline.
4. Initial assessments will focus on events related to current systems.
5. As concepts reflecting this capability are developed, additional assessment opportunities will be identified.
6. Assessments will focus on improving information access. Events currently identified include:
   - Initial JDST Fielding
   - DARPA Technology Insertion
   - GCCS/GCSS "One Net"
   - Biennial Focused Logistics Wargame 2010 (FLOW)
   - ACOM JV 2010 master assessment events
7. Acquire resources and implement.

Other Affected JV 2010 Coordinating Authorities: Information superiority, Command and Control.

Other CA #1 Address: J-7/J-3 **Tel (DSN):** **E-Mail**:	**Interest/Connection:** C2 aspects
Other CA #2 Address: J-6 **Tel (DSN):** **E-Mail**:	**Interest/Connection**: Information Superiority aspects

Remarks: This Focused Logistics desired operational capability requires J-7/J-3 action to implement a fully integrated command and control system and J-6 action to establish a robust communications infrastructure.

Key Words:

- Information access
- Integrated, interactive database
- Logistics information
- Joint decision tools
- Network, NetWare
- Web based system
- Interoperability

Last update 8/25//98

APPENDIX F

GLOSSARY

PART I ? ABBREVIATIONS AND ACRONYMS

AC	active component
ACTD	advanced concept technology demonstration
ACVLAP	Air Cushioned Vehicle Landing Platform
AIS	automated information system
AIT	automatic identification technology
AJC2	Adaptive Joint Command and Control
ALP	Advanced Logistics Project
AMC	Air Mobility Command
AMP	avionics modernization program
AOACMT	Attack Operations Against Critical Mobile Targets
AOR	area of responsibility
APC	armored personnel carrier
APOD	aerial port of debarkation
APOE	aerial port of embarkation
ATD	advanced technology demonstration
ATT	Advanced Theater Transport
BCA	baseline collective assessment
C^2	command and control
C4I	command, control, communications, computers, and intelligence
C4IFTW	Command, Control, Communications, Computers and Intelligence for the Warrior
CAP	crisis action planning
CBW	chemical and biological warfare
CINC	commander in chief
COA	course of action
CONPLAN	concept plan
CONUS	continental United States
CORE	Contingency Response Program
CPLAN 00	Campaign Plan 2000
CRAF	Civil Reserve Air Fleet
CROP	Common Relevant Operational Picture
CS	combat support
CSS	combat service support
DARPA	Defense Advanced Research Projects Agency
DLA	Defense Logistics Agency
DOC	Desired Operational Capability
DoD	Department of Defense
DOTMLP	Doctrine, Organization, Training and Education, Materiel, Leadership, People

DPG	Defense Planning Guidance
DSB	Defense Science Board
DST	decision support tools
DTS	Defense Transportation System
DZ	drop zone
ELCAS(M)	Elevated Causeway System (Modular)
FC	floating causeway
FLEEDO	Focused Logistics: Enabling Early Decisive Operations
FLOW	Focused Logistics Wargame
FSSL	fast shuttle sea lift
GCCS	Global Command and Control System
GCSS	Global Combat Support System
GPS	Global Positioning System
GTN	Global Transportation Network
HEMTT	heavy expanded mobile tactical truck
HNS	host nation support
HSCT	High-Speed Civil Transport
HSS	high speed sealift
IBM	International Business Machine
ICT	Integrated Concept Team
ISB	intermediate staging base
ISO	international organization for standardization
ITO	Installation Transportation Officer
ITV	in-transit visibility
JBC	Joint Battle Center
JDPO	Joint Deployment Process Owner
JFC	joint force commander
JFRG II	Joint Force Requirements Generator II
JIMP	Joint Vision Implementation Master Plan
JLOTS	joint logistics over the shore
JMLS	Joint Modular Lighter System
JOA	joint operations area
JOPES	Joint Operations Planning and Execution System
JRSOI	joint reception, staging, onward movement, and integration
JTAV	joint total asset visibility
JTF	joint task force
JV 2010	Joint Vision 2010
LAIRCM	large aircraft infrared countermeasures
LCAC	Landing Craft Air Cushioned
LMSW	Lockheed Martin Skunk Works
LO/LO	lift-on/lift-off
LOC	line of communications
MANPADS	man portable air defense system
MC	mission capability
MHE	material handling equipment
MJIE	major joint integrating experiment
MLRS	Multiple Launch Rocket System

MOG	maximum on ground
MOOTW	military operations other than war
MRS 05	Mobility Requirements Study 2005
M&S	modeling and simulation
MSC	Military Sealift Command
MTMC	Military Traffic Management Command
NASA	National Aeronautics and Space Administration
NCA	National Command Authorities
NDF	national defense features
OCONUS	outside the continental United States
OMC	Optical Memory Card
OPLAN	operation plan
ORNL	Oak Ridge National Laboratory
PGM	precision guided missile
PLS	Palletized Load System
POD	port of debarkation
POE	port of embarkation
PREPO	prepositioning
RC	reserve component
RDO	Rapid Decisive Operations
RF	radio frequency
RFID	radio frequency identification
RIB	rapidly installed breakwater; Rigid Inflatable Boat
RO/RO	roll-on/roll-off
RRDF	Roll-On/Roll-Off Discharge Facility
SASC	Senate Armed Services Committee
SBA	strategic brigade airdrop
SD	strategic deployment
SEAL	sea-air-land team
SEV	surface effect vessel
SKE	station keeping equipment
SPOD	seaport of debarkation
SPOE	seaport of embarkation
STOL	short take-off and landing
STOM	ship to shore maneuver
STUFT	ships taken up from trade
SSTOL	super short take-off and landing
TC-AIMS II	Transportation Coordinator's Automated Information for Movement System II
TCC	transportation component command
THAAD	Theater High Altitude Area Defense
TMO	traffic management office
TPFDD	time-phased force and deployment data
TrAMS	Transportation Automated Measurement System
ULA	ultra large airship
USCENTCOM	United States Central Command
USEUCOM	United States European Command

USTRANSCOM	United States Transportation Command
VISA	Voluntary Intermodal Sealift Agreement
WMD	weapons of mass destruction
WME	weapons of mass effects
WPS	Worldwide Port System

PART II ? TERMS AND DEFINITIONS

outsized cargo. Cargo which exceeds the capabilities of the C-141 aircraft and requires the use of a C-5 or C-17. (AMC Command Data Book, November 1999)

oversized cargo. Any single item that exceeds any one of the following dimensions: 104 inches long, 84 inches wide, and 96 inches high and will not fit on a 463L palette. (AMC Command Data Book, November 1999)