

USAWC STRATEGY RESEARCH PROJECT

**Army Pre-Positioned Stocks and High-Speed Sealift**

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## ABSTRACT

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Strategic mobility is critical to our ability to augment forces already present in a region. The Army pre-positioned brigade sets in Qatar, Kuwait, South Korea, Europe, and Afloat are designed to enhance U.S. forward presence—allowing reinforcing brigades to be combat ready and able to deter aggression within days vice weeks/months. This paper will specifically look at land and afloat pre-positioned brigade sets and the utilization of high-speed sealift to enhance the Army's ability to quickly deploy in support of our National Military Strategy.



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## PREFACE

This paper is the result of my interest in high-speed sealift technology and the impact it has on the Army's force projection capability. It provides information to stimulate dialogue and serves as a catalyst that could lead to positive changes in the Army's strategic mobility program. The Army has committed tremendous resources to address the deployment process, infrastructure improvements, pre-positioned stocks, and other enablers. However, high-speed sealift used in conjunction with pre-positioned equipment helps create a seamless intermodal system that will maximize the throughput, helping to bridge the gap between strategic lift and actual, assured entry into the theater of operations.

I am grateful to my SRP advisor COL Nick Anderson for his guidance in the completion of this paper. Without his urging that kept my nose to the grindstone and his superb advice and editorial suggestions, this study would not have been possible. I am also thankful to my wife Lori for her encouragement and editorial suggestions during various stages of this study.





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## ARMY PRE-POSITIONED EQUIPMENT AND HIGH-SPEED SEALIFT

The Army is undergoing a major transformation, but its own resources are being directed toward the Interim and Objective force and not the transportation assets required to get combat forces to the fight. When the Chief of Staff, Army (CSA) unveiled his vision of Transformation in October 1999, he set deployment requirements of putting a combat-capable brigade anywhere in the world within 96 hours, a full division in 120 hours and five divisions on the ground within 30 days. The focus of Transformation has been on equipment that can be transported on C-17 and C-130 like aircraft. There has been much discussion of whether the Army is limiting the next generation of systems by forcing it to fit into a specific size airframe. Is it reasonable to assume the Air Force will be the primary transporter of Army equipment if a division is required to be on the ground in 120 hours (5 days)? Based on past conflicts and operations, unless the Army is the main force and few fighter aircraft are required, the Air Force will likely tie up transport aircraft for the first week getting its own equipment and logistics into theater, not the Army's.

The Army has stated that hardware is not the centerpiece of this transformation—people are, but the Department of Defense and Congressional focus of Army Transformation efforts have been on the equipment and the capabilities they provide. The equipment is useless, however, unless it can be brought to the right place at the right time with people trained ready to use it. A problem facing the Army is its relevance hinges on strategic airlift and sealift, relying heavily on the Air Force and Navy to get to the fight in a timely manner. However, the other Services have no incentive to spend their resources to help the Army get there quicker. Given the major transformation the Army is undergoing, why not look at technologies and systems that the Army can utilize today or make investments today that will get forces to the fight faster? The Army is one of the few forces that come to the table with truly a joint requirement—totally dependent on the other Services to get to the fight, creating a quandary for itself. The Army is the premier sustained dominant land maneuver force, but if it can't get to the fight quickly, Combatant Commanders may request other Services provide the combat capabilities required to rapidly accomplish the mission.

Does the Army need to totally rely on the Air Force and the Navy to get forces to the fight on time? If the Army is determined to remain relevant, flexible, and capable of providing the Combatant Commanders with decisive land combat capabilities within in a short period of time, will the Army be considered irrelevant? The famous military strategist Sir Basil Liddell Hart once said, "The only thing harder than getting a new idea into the military mind is to get an old one out." The old idea in this case is focusing on fitting into C-130 like aircraft and the Army's total reliance on the other Services for lift assets to move forces into theater.

A Congressional Budget Office study found that, "During the Gulf War, the Department of Defense transported 72 percent of its dry cargo on ships that steamed from the United States, and another 13 percent on ships that held pre-positioned equipment nearer the region."<sup>1</sup> Additionally, FM 100-17-2 states, "Historically, 10 percent of materiel sent to a theater arrives via airlift, while the remaining 90 percent arrive via sealift. However, strategic airlift and sealift often face multiple demands and cannot immediately deliver large amounts of heavy equipment to meet short-notice crises."<sup>2</sup> With the large proportion of materiel and equipment flowing by sealift, why is Army Transformation focusing on the ability to fit into a C-130 like aircraft? Since more than 90 percent of Army equipment and supplies flow by sea, why does the Army not focus its efforts to enhance this capability?

The Army Transformation is needed, but meeting the stringent deployment timelines requires additional resources for the Army's primary transportation workhorse: sealift. Specifically, high-speed sealift has the potential to help the Army achieve its deployment timelines especially if used in concert with pre-positioned equipment sites. The following extracts from the Army Science Board highlight some of the things that could be done to improve deployment timelines and provide insight into the science of deploying forces:

The Army can achieve early entry closure in 4-7 days and total closure in 35 days if it reduces the weight of early entry forces by 50%, decreases container ship load/unload time by 66%, decreases all other load/unload time by 50%, employs 66 Civil Reserve Air Fleet (CRAF), doubles Sea Ports of Debarkation (SPOD) and Air Ports of Debarkation (APOD) throughput capacity, and employs 1.6 million short tons of sea lift (80 container ships).<sup>3</sup>

Force closure is a function of three variables: the movement requirements, the distance the requirements must be moved, and finally, the capabilities to move (and throughput) the requirements. Closing the force faster can be accomplished by increasing capabilities (lift and throughput), decreasing movement requirements (reducing logistics and lightening the force), shortening the movement distance, or a combination of the three.<sup>4</sup>

Since decreasing movement requirements is a function of the type and size of the force and reducing the logistics footprint, it will not be addressed in this paper. This paper will focus on the other two variables: increasing capabilities and shortening the movement distance, specifically looking at what the Army has done in the areas of land and afloat pre-positioned brigade sets and the utilization of high-speed sealift to enhance the Army's ability to quickly deploy in support of our National Military Strategy.

## **BACKGROUND**

The National Military Strategy (NMS) defines Overseas Presence as “the strategic placement of permanently stationed, rotationally deployed and temporarily deployed U.S. military forces overseas, and the infrastructure and pre-positioned equipment necessary to sustain them in and near key regions.”<sup>5</sup> The NMS goes on to state, “Strategic mobility requires robust sealift, airlift, space lift, and ground transportation supported by adequate and sufficient air refueling assets, mobility infrastructure, material handling equipment, and pre-positioned stocks of supplies and equipment.”<sup>6</sup> Strategic mobility is critical to our ability to augment forward-deployed forces or quickly reinforce a region, and pre-positioned equipment sets are a critical enabler identified in the NMS.

The Army pre-positioned brigade sets in Qatar, Kuwait, South Korea, Europe, and afloat are designed to enhance U.S. forward presence, allowing reinforcing brigades to be combat ready and able to deter aggression within days instead of weeks or months. Pre-positioned equipment is intended to be flexible with the ability to transfer stocks from one theater to another in support of worldwide requirements of any war fighting Combatant Commander. The flexibility to transfer stocks between theaters is one of the lessons learned from Operation Desert Storm, but it is unlikely that land-based pre-positioned equipment in Southwest Asia or Northeast Asia would be moved to another theater because of the threat of a second Major Theater War (MTW).

“Army pre-positioned materiel around the world plays a critical role in rapidly equipping forces deploying to major theater wars (MTWs), smaller-scale contingencies (SSCs), stability operations, or support operations.”<sup>7</sup> The Army did not have pre-positioned equipment sets in the region prior to Desert Shield. Moreover, if Iraqi forces had continued South after defeating Kuwait in early August 1990, the Light Infantry 82nd Airborne Division, deployed to deter further Iraqi aggression, would have had little chance of halting Iraqi tanks. Instead, the Division would possibly have been a series of speed bumps in the path of the oncoming Iraqi forces.

The current Army pre-positioned brigade sets began in earnest after Desert Shield/Desert Storm with the development of the Army Strategic Mobility Program (ASMP) Action Plan, published in 1993. The plan highlighted the need to quickly provide a crisis response force to deter potential adversaries. It called for a light or airborne brigade-size force in theater by C+4; a light or airborne division by C+12; an afloat heavy combat brigade with support by C+15; two divisions by C+30; and the remaining two divisions by C+75.<sup>8</sup> The Action Plan was developed prior to Army Transformation, but is obviously out of synch with the new deployment timelines of 96 hours, 120 hours, and 30 days. With this obvious disconnect one would expect the Army to be adjusting the timelines reflected in its Field Manuals, but that is not happening. The Army does not currently have the means to bring the equipment into theater any faster than reflected in the Field Manuals.

Pre-positioned equipment sets began in 1962 with what was known as the pre-positioned materiel configured to unit sets (POMCUS) in Europe for reinforcement units deploying to Europe to resist a Soviet attack. Although the U.S. military was able to use the POMCUS sets during major exercises, which undoubtedly made the Soviet Union think twice before crossing the border, the equipment was never used by that theater in war. Is it likely that with the conventional and asymmetric threats facing the United States today that the Army can predict the location of the next conflict and be able to have pre-positioned equipment already in the region prior to the outbreak of hostilities? More importantly, will the Army be able to assemble a large force within weeks instead of months, possibly achieving its deployment timelines of 96, 120 and 30? The answers are possibly, but will require a significant commitment of resources today.

What if the Army reevaluated the pre-positioning program altogether? Instead of focusing on a specific country to pre-position equipment to fight a major threat, equipment could be pre-positioned forward in several areas near major ports permitting combat forces to quickly fall in on that equipment and spring forward via high-speed sealift into theater in days instead of weeks or months. Rather than bringing equipment on Large Medium-Speed, Roll-On/Roll-Off (LMSR) ships that require a deep water port within or near the theater of operations, the Army, in conjunction with the Navy, could establish a floating Intermediate Staging Base (ISB) to offload the equipment to a high-speed sealift vessels and push task forces to the theater. Combining the capabilities of pre-positioned equipment and high-speed sealift reduces Army dependence on one specific pre-positioned equipment site or sea port of debarkation (SPOD). Rather, a theater may be attacked from several different sites.

## STRATEGIC MOBILITY

Since the end of the Cold War and the reduced overseas presence, the centerpiece of the Army's strategy has been power projection through the strategic mobility triad. The Army's Strategic Mobility triad consists of pre-positioning, airlift, and sealift—enabling the Army to quickly move into theater and build decisive force in a short period of time. Being able to quickly apply decisive force on an opponent becomes more critical in the asymmetric threat environment the Army finds itself today because of shortened time periods to prevent or defeat an immediate threat.

According to a 2000 Army Science Board study, "Force projection is an absolute necessity for Army Transformation. Without the ability to project forces rapidly, and to assure access to theater, the rest of the Army Transformation is moot—We are, indeed, a force projection Army.<sup>9</sup> The Army Strategic Mobility Program provides the ability to rapidly project military power and dominate an adversary. The objective is to gain the operational initiative through a show of force, set the conditions for a quick build-up of combat power and if required to swiftly defeat an adversary.

Sealift has been, and will continue to be, the primary means for transporting large amounts of Army equipment, ammunition, and supplies. After the end of the Cold War the Army became much smaller and, as a result, is becoming primarily a Continental United States (CONUS) based force. With less than half of the Army's ten active Divisions stationed outside CONUS, the need to rapidly deploy becomes more pronounced. The Army's ability to project combat power worldwide is tied directly to the ability of the Air Force and Navy to rapidly transport personnel and equipment to the theater of operations and on the forward pre-positioning of combat equipment.

## ARMY PRE-POSITIONED STOCK

Although the Army did not have pre-positioned brigade sets in the Persian Gulf before the 1991 war with Iraq, it did have a pre-positioning fleet consisting of four ships used primarily for transporting ammunition and port handling equipment. The only land-based stocks were maintained in Europe for almost 30 years prior to the end of the Cold War and known as POMCUS. These pre-positioned sets made it easy for units from the United States to deploy to Europe, draw their equipment, and participate in Return of Forces to Germany (REFORGER) exercises, but due to their location and under the control of Combatant Commanders prior to 1991, it was more complicated moving equipment to other theaters. What were formerly war reserves and POMCUS stocks are now combined into Army War Reserve stocks.



FM 100-17-2 states, "The land-based Army pre-positioned stocks allow the early deployment of a heavy brigade in Korea, Europe, or Southwest Asia by C+4. These pre-positioned sets of equipment are essential to the timely support of United States national military strategy in the areas of U.S. national interest and treaty obligations."<sup>10</sup> The Army War Reserve includes the five (5) Army pre-positioned stocks (APS) shown in Figure 1: APS-1 consists of CONUS based stocks, APS-2 are stocks stored in Europe, APS-3 are stocks pre-positioned aboard ships, APS-4 are stocks located in the Pacific, and APS-5 are stocks located in Southwest Asia.

The APS program encompasses pre-positioned brigade sets, operational project stocks, and sustainment stocks. The Army's global pre-positioning strategy calls for 8 pre-positioned brigade sets (two in Central Europe, one in Italy, one in Korea, two in SWA, and two afloat.). The ASMP is the key to ensuring these forces possess a credible power projection capability. However, even if a conflict occurs in one of the critical regions, the Army's ability to quickly assemble five divisions in 30 days is totally dependent on availability and speed of transport ships.

## Army Pre-Positioned Stocks

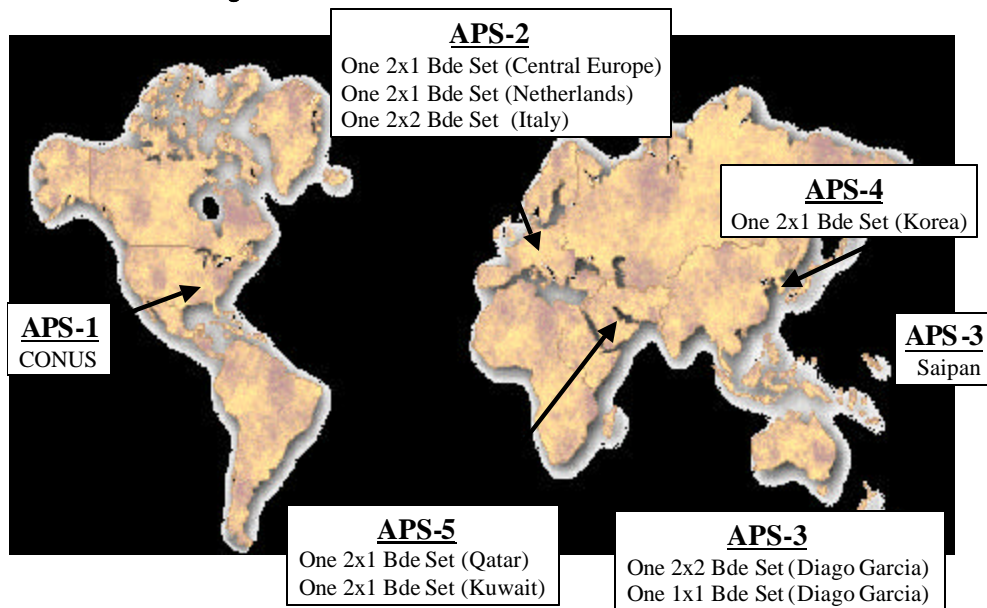


FIGURE 1. ARMY PRE-POSITIONED EQUIPMENT SITES

The Army pre-positioned stock 1 (APS-1) is land-based in CONUS and consists of pre-positioned materiel (end items, secondary items, and supplies) stored in unit sets to reduced force deployment time and Operational Project Stocks that provide materiel above normal authorizations that are tailored to provide key strategic capabilities essential to the Army's ability to execute its Force Projection Strategy. Examples of Operational Project Stocks include Inland Petroleum Distribution System (IPDS), Reverse Osmosis Water Purification Unit (ROWPU), Forward Area Water Point Supply System (FAWPSS), and the Water Storage and Distribution System (WSDS).

APS-2 is land-based in the European theater and consists of three brigade sets. Two 2x1 brigade sets in central Europe, one 2x2 brigade set in Italy, six operational project stocks in the Netherlands, an Immediate Ready Stocks Force in Germany, and a field artillery (FA) battalion as part of the NATO composite force. As an example, a 2x1 Brigade set consisting of 2 Armored Battalions and 1 Mechanized Infantry Battalion includes: 88 Tanks; 54 Bradley Fighting Vehicles; 331 Other Tracked Vehicles; and 849 Wheeled Vehicles. All are stored in unit sets to reduced force deployment time.

APS-3 is afloat and consists of one 2x2 brigade set, port opening equipment, sustainment stocks and ammunition for a contingency corps of five and a third (5 1/3) divisions on various ships. Based on Defense Planning Guidance (DPG) directives, the Army pre-positioned an additional one brigade set (second brigade set was a 1x1 brigade) and pre-positioned as part of APS-3 on two LARGE Medium Speed Roll On/Off (LMSR) vessels. The APS-3 fleet currently consists of 13 ships, including 8 newly constructed LMSRs, based at Diego Garcia in the Indian Ocean and Guam and Saipan in the Pacific. APS-3 ships are principally floating warehouses that provide afloat pre-positioning for equipment, munitions, and supplies to support U.S. Army combat units that would deploy to potential contingency sites and carry enough cargo to equip an entire Army Task Force and its combat support and combat service support units, including 58 tanks, 48 other track vehicles, plus more than 900 trucks and other wheeled vehicles. The ship carries vehicles and equipment to support humanitarian missions, as well as combat missions. New LMSR vessels have a cargo carrying capacity of more than 380,000 square feet, equivalent to almost eight football fields.

APS-4 is land-based and consists of one 2x1 brigade set positioned in Korea, stored in unit sets to reduced force deployment time; 10 operational projects and sustainment stocks stored throughout the Korean peninsula; 6 operational projects and sustainment stocks stored in Japan; and 2 operational project stored in Hawaii.

APS-5 is land-based and consists of one 2x1 brigade set stored in Kuwait, another 2x1 brigade set and a Division Base (-) stored in Qatar, and operational project stocks. The Army is looking at the plans to possibly store another brigade set in the region at a future date.

The Army Strategic Mobility Program supports the Army's rapid deployment strategy by providing a capability for Army forces based in CONUS to meet regional commitments and provides the Combatant Commanders with deployment flexibility and increased capability to respond to a crisis or contingency with a credible force. All Army war reserves (AWR) and pre-positioned stocks are managed by the Army Materiel Command (AMC), Alexandria, Virginia. Previously, war reserve materiel was managed by theater Combatant Commanders which limited the flexibility of transferring stocks from one theater to another. Placing all five geographic sets of AWR under central management in October 1994 implemented one of the lessons learned from Operation Desert Storm. The objective of the APS program is to support the worldwide requirements of any war fighting Combatant Commander.

According to FM 101-17-1, "Army Pre-positioned Afloat assets allow the early deployment of an Army heavy brigade forces, theater-opening CS/CSS forces, port-opening capabilities, and sustainment stocks in order to minimize the initial requirement for the strategic lift."<sup>1</sup> To accomplish this, the brigade must arrive in the theater of operations (by airlift, sealift, or ground transportation) and be combat effective by C+15. In view of global operations, Army Pre-positioned afloat must provide the flexibility to conduct operations across the range of military operations. However, this might not be possible.

During the initial stages of Operation Restore Hope in Somalia, three pre-positioned ships were unable to offload their cargoes because their draft prevented them from entering the harbor at Mogadishu. Even though all three had the capacity to offload in the stream, rough seas made such an offload impossible. After two weeks of trying to find suitable ports, two of the ships returned to Diego Garcia without discharging their cargoes.<sup>12</sup>

## HIGH-SPEED SEALIFT

The Department of Defense 2001 Quadrennial Defense Review (QDR) Report emphasizes reorienting the U.S. global military posture to: “Provide sufficient mobility, including airlift, sealift, pre-positioning, basing infrastructure, alternative points of debarkation, and new logistical concepts of operation, to conduct expeditionary operations in distant theaters against adversaries armed with weapons of mass destruction and other means to deny access to U.S. forces.”<sup>13</sup> The QDR goes on to task the Secretary of the Navy to “develop new concepts of maritime pre-positioning, high-speed sealift, and new amphibious capabilities for the Marine Corps.”<sup>14</sup>

The Marine Corps has been working with private industry (Austal Limited of Australia) and is currently leasing a modified, off-the-shelf, high-speed ferry called the “WestPac Express” which has demonstrated significant abilities for the Combatant Commander. Not only can the High-Speed Catamaran quickly deliver equipment utilizing intra-theater lift, but



FIGURE 2. WESTPAC EXPRESS

the Marines have delivered entire force packages within a day without the need to fly troops to the APOE to link up with their equipment at a staging base. The Reception, Staging, Onward-Movement, and Integration (RSOI) are almost entirely eliminated since the force can quickly move directly to an assembly area or battle position once they arrive in theater.

“Great promise has been shown for conducting intra-theater sealift operations, transporting one Marine battalion with its equipment and personnel in one trip, taking double the amount of equipment that can fit on transport aircraft — essentially replacing fourteen to seventeen C-17 sorties.”<sup>15</sup> The success of this experimental program has improved reliability, flexibility, and capacity over airlift, saving time and money, and reducing the workload on aging aircraft. The Marines utilizing the WestPac Express have been extremely pleased with its

capabilities, indicating that the ship has the potential to revolutionize the training program for the Marines on Okinawa. One officer was quoted as stating, "Using a fast, quickly loadable ferry instead of airlift for training transportation could save up to 150 battalion training days for nine-battalion Marine infantry division."<sup>16</sup>

The Army is also leasing high-speed sealift with a program called the Theater Support Vessel (TSV) that is essentially the same as the Marine Corps. In fact, the performance data from the Marine Corps is used for future TSV application and design. The TSV recently moved the Army's new Stryker brigade and its crews from California to Washington (1200 miles) in 42 hours, including 40 minutes to load and 20 minutes to off-load. The desired speed for the TSV is 40+ knots, but technology indicates that 60+ knots are possible.



FIGURE 3. THEATER SUPPORT VESSEL

The Army leased the *Joint Venture* craft in 2002 to assess the capabilities of this type of technology for future procurement. The joint-service experiment is being coordinated by the Navy Warfare Development Command in close partnership with the Army, Navy, Marine Corps, and Coast Guard. The Army is assessing the capabilities of *Joint Venture* HSV-X1 as a high-speed, wave piercing catamaran undergoing joint-service experimentation. The *Joint Venture* is a 313-foot aluminum wave-piercing catamaran capable of transporting a battalion task force (up to 500 fully equipped troops, together with their vehicles and equipment), to ranges of up to 1000 nautical miles at speeds greater than 40 knots. It is approximately twice as fast as vessels currently in the Army's watercraft fleet and, since April 2002, the ship has been used to move equipment and personnel in the Persian Gulf in support of Operation Enduring Freedom.

The Army's 3<sup>rd</sup> Corps Support Command (COSCOM) is also participating in the *Joint Venture* experiment in "the Army's future deployment systems and logistics equipment empowered with the Army's future satellite tracking capability."<sup>17</sup> 3<sup>rd</sup> COSCOM is utilizing the ship in conjunction with a corps exercise shipping equipment and personnel from Bremerhaven,

Germany to Szczecin, Poland. This is the first demonstration of transporting complete Army force packages of soldiers and equipment using high-speed sealift technology. High-Speed Sealift provides the Combatant Commander with modular/tailorable force packages that are combat loaded, self deploying, mission configurable, and ready for use upon arrival.

Based on recent experiments, the *Joint Venture* craft appears to be ideal for accomplishing intra-theater lift of entire force packages, but this same technology could also be available for inter-theater lift. In addition to the intra-theater high-speed sealift discussed above, Nigal Gee and Associates have proposed a Pentamaran ship which can carry 12000 tonnes (13,225 short tons) of containerized cargo at 40 knots economically.<sup>18</sup> They have also examined the possibility of a 60 knot, 4000 tonne (4,410 short tons) transatlantic freighter. As a comparison LMSR vessels travel at 24 knots (carrying a brigade set of equipment) and have a cargo carrying capacity of more than 380,000 square feet, equating to over 65,000 short tons. Although the proposed inter-theater Pentamaran ships have potential, five (5) Pentamaran ships would be required to carry the same cargo capacity as one (1) LMSR.

## **ALTERNATIVES**

Without having to rely entirely on the Navy and Air Force the Army has three basic alternatives for improving its force projection capability. First, it can increase the number of land based pre-positioned equipment sites, but must ensure they are close to a sea port of debarkation (SPOD) in order to utilize high-speed-sealift capabilities. Second, it can increase the number of afloat pre-positioned equipment sets. Third, it can purchase high-speed sealift to transport personnel, equipment and supplies within the theater of operations. By themselves, these alternatives will not achieve the deployment timelines set forth in the Army Vision. However, working in combination, they have the potential to help the Army achieve its goals.

An alternative of procuring additional airlift assets used exclusively to transport Army units and equipment, will not be explored due to cost and the fact that 90 percent of Army equipment moves by sea. In addition, a 1997 Congressional Budget Office study found that expanding the pre-positioning program was more cost effective than purchasing additional C-17 aircraft.<sup>19</sup>

### **INCREASE THE NUMBER OF LAND-BASED PRE-POSITIONED SETS**

The Army could move toward land-based pre-positioned equipment strategically located near ports of embarkation in critical regions. The Army already has several pre-positioned sites near ports in Qatar and Italy. Expanding the number of these sites to allow force packages of battalion and higher units would provide the Army a tailorable package that can quickly enter a littoral region and move to support a Combatant Commanders mission. This would allow a

battalion or brigade size unit to fly into the pre-positioned equipment site, draw the equipment, and deploy to the contingency in a relatively short period of time. Additionally, placing the pre-positioned sites near SPODs will ensure the Army will be able to utilize emerging high-speed sealift technology that allow units to deploy as a complete force packages.

#### INCREASE THE NUMBER OF AFLOAT PRE-POSITIONED SETS

The Army currently has two afloat brigade sets, a 2x2 brigade set and a 1x1 brigade set in addition to port opening equipment, sustainment stocks and ammunition for a contingency corps of five and a third (5 1/3) divisions. Expanding this capability with the infusion of the capabilities provided by the Interim Brigade Combat Team (IBCT) provides the Combatant Commanders more options when responding to contingencies. Additionally, positioning high-speed sealift assets with afloat LMSR pre-positioned equipment sets would allow an entire unit to draw its equipment, load the equipment on the high-speed ship, and deploy a complete battalion task force to a contingency. This would require an LMSR to be positioned with an intermediate staging base (ISB) to offload equipment to the high-speed vessel.

#### PURCHASE HIGH-SPEED SEALIFT

High-speed sealift used simply as an intra-theater mode of transportation can support the deployment of forces from a pre-positioned equipment site or from an ISB as a transportation hub located outside a theater of operations, which minimizes the reliance on fixed SPODs. At the pre-positioned equipment sites or ISBs the Army would maintain high-speed sealift capable of deploying an entire battalion or brigade task force into the theater of operations. With LMSRs positioned with an ISB, either floating or ashore, high-speed sealift can take equipment ashore quickly and if the combat equipment is configured in battalion size units onboard the ships they can easily be offloaded and shuttled ashore. While deployed on the ship, the task force could conduct briefings, develop operations orders, and conduct rock drills (rehearsals). If the mission changes while the task force is in transit, the staff is ready to work the new mission while the ship changes course.

## **ANALYSIS OF ALTERNATIVES**

### **LAND-BASED PRE-POSITIONED EQUIPMENT**

Land-based pre-positioned equipment sends a strong signal to the world. Since the host country has granted basing rights, it indicates the United States is willing to use force to protect the region and its allies from aggressors. It also signals that the United States will be conducting operations from that region and, therefore, U.S. presence will be observed. However, pre-positioned equipment provides a lucrative target for potential adversaries. The size of a pre-positioned brigade/battalion facility could provide a rational target where an adversary can disrupt or deny the U.S. forces from using the equipment through the use of asymmetric threats. This could include terrorist activities, sabotage, chemical or biological use, and possibly nuclear weapons to hinder operations or deny access.

Land-based sets can be drawn easily, exercised, maintained, and returned to the pre-positioned sites much the same way POMCUS sites were used in Europe during the Cold War. However, pre-positioned equipment sites also provide an adversary a target. Additionally, forward presence of U.S. forces or facilities provides local opposition groups the opportunity to protest against U.S. actions. Therefore, overseas locations need to be well thought out. If the Army increases the number of pre-positioned battalion or brigade sets of equipment, the sets should be located near a SPOD to take advantage of high-speed sealift and the ability to rapidly deploy a battalion task force in support of the Combatant Commanders.

### **AFLOAT PRE-POSITIONED EQUIPMENT**

As reflected in Field Manual 100-17-1, "An afloat heavy combat brigade with its support assets should close in the theater and be ready to fight not later than C+15."<sup>20</sup> Some of this time is for transit, offload, and RSOI prior to a unit being ready to fight. Unless a conflict is within one of the critical regions (Korea or Southwest Asia) where land based pre-positioned brigade sets are stored, or unless the afloat sets are positioned within a day of the AOR, the Army utilizing the afloat pre-positioned heavy combat brigade set will not be able to deploy a brigade in 96 hours.

In addition to not meeting the timelines, the Army afloat pre-positioning program has experienced some problems, as reflected in both the 1996 and 1997 General Accounting Office (GAO) Reviews. The 1997 GAO report highlighted, "As of April 1997, 13 of the 51 unit sets of equipment that are assigned to Army pre-positioning ships and considered for readiness



reporting, or about 25 percent, did not meet the Army's readiness goal that 90 percent of available war reserve equipment be fully mission capable.<sup>21</sup> The Army has historically found that additional mechanics must be brought into port when a ship is offloaded to help get the equipment combat ready in a short period of time.

The afloat pre-positioning program allows forces to quickly move into theater, but it is difficult to maintain equipment. Afloat brigade sets are programmed for maintenance every 30 months at Charleston, South Carolina, as maintenance aboard ship is limited due to the inability of shipboard technicians to access the equipment for other than minor maintenance. According to a 1997 GAO report, "Army and maintenance contractor officials said that the tendency of equipment to deteriorate while in storage aboard ships continually lowers readiness rates. For example, gaskets and seals dry rot, tires go flat, equipment rusts, and batteries die."<sup>22</sup> Therefore, the Army upgrades the equipment on the afloat set approximately every 30 months, when the ships conduct their maintenance and checks. But the afloat brigade set is usually the last to be upgraded and new equipment may not be available to place on the ship during its maintenance cycle. For afloat brigade sets, as with land-based sets, units trained to operate the latest systems might have to retrain on older equipment prior to being used as a maneuver force, resulting in delayed buildup of combat power.

The newer LMSRs require deep draft ports (30-40 feet) to offload their equipment. This is problematic, as the number of deep draft ports throughout the world are limited. In addition, these ports will likely become a strategic target for an aggressor use of asymmetric threats to deny access. The Army does have the capability to offload in-stream, but the shortfalls experienced in Mogadishu support a need to pursue shallow draft vessels.

#### HIGH-SPEED SEALIFT

High-speed sealift used in conjunction with any combination of the other alternatives could provide the Army the transformational advantage it is seeking. In an evaluation of high-speed sealift, Owen Spivey stated, "By using composite materials, new drag-reducing hull forms, digital controls, and improved engines with increased fuel efficiency, it may be possible to build a high speed strategic vessel capable of transporting vehicles and materiel at speeds in excess of 60 knots up to Sea State 7."<sup>23</sup> Utilizing the high-speed Sealift technology, complete force packages can be delivered to a theater of operation quickly, with limited RSOI operations. A

battalion can be transported quickly and offload at most beaches without the deep port restrictions experienced by LMSRs. Additionally, rather than providing litterage to transport equipment from an LMSR to the shore, high-speed sealift can be used, thereby, keeping the large ship away from potential aggressive actions.

High-speed sealift has demonstrated great promise in conducting intra-theater operations, but it also shows potential for conducting inter-theater operations. In 1998, the Buquebus fast ferry *Catalonia* broke the transatlantic speed record. “The 91 meter, 400 dwt vessel, capable of carrying 900 passengers and 260 vehicles completed the 3,125 miles crossing the Atlantic from Manhattan to Tarifa, Spain in 3 days, 9 hours and 55 minutes. Its average speed was 38.877 knots.”<sup>24</sup> This allows the Army to transport a battalion size task force, personnel and equipment very quickly in an emergency.

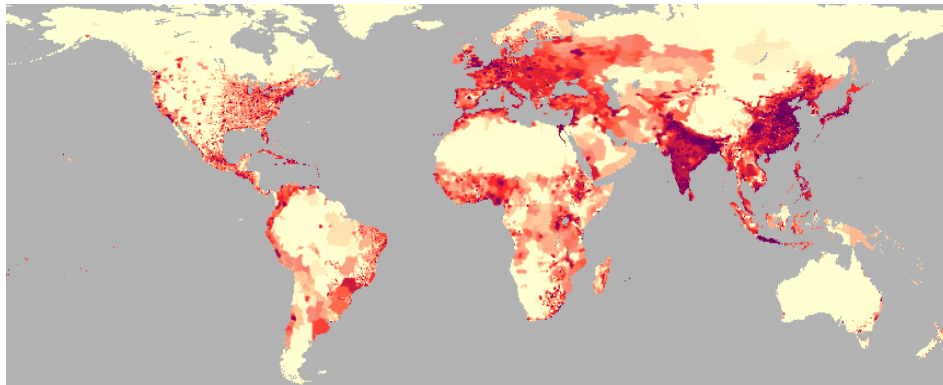


FIGURE 4. WORLD POPULATION DISTRIBUTION

The majority of the world's population lives on or near the coastlines (Figure 4). The darker areas reflect higher population concentrations. “Population studies have shown that the overwhelming bulk of humanity is concentrated on just 10% of the earth's surface. As of 1998, over half of the population of the planet—about 3.2 billion people—lives and works in a coastal strip just 200 kilometers wide (120 miles), while a full two-thirds, 4 billion, are found within 400 kilometers of a coast.”<sup>25</sup> Utilizing shallow draft high-speed sealift vessels the Army can quickly deploy a combat force within a few hundred miles of most of the world's population.

This paper is not proposing the Army become an amphibious force capable of securing beachheads—the Department of Defense already has a premier amphibious assault force: the United States Marine Corps. However, used in conjunction with pre-positioned equipment sets, or an ISB, high-speed sealift provides an Army unique intra-theater lift asset that transports

personnel and equipment together, allows for underway mission planning and rehearsal, access to austere shallow draft ports, reduces enemy asymmetric threats, complements strategic airlift, improves throughput, and provides intra-theater operational & tactical movement and maneuver while retaining the capability to provide lift and sustainment support. The 1999 and 2000 Army Science Board encourage this type of initiative:

Emphasize the exploitation, stimulation and adaptation to commercial initiatives, which have high payoff for the Army such as high speed sealift. The DCSOPS should forward to the Navy revised Army requirements for Strategic Sealift, to include High Speed Sealift (HSS). The VCSA should enter into partnership with the Navy and DOT to pursue actively Title XI support for HSS and the incorporation of National Defense Features (NDF) to support military cargo and austere port operations.<sup>26</sup>

Of all lift assets, shallow-draft high-speed ships (SDHSS) appear to have the most significant impact on assured access. It is the only strategic platform that can deliver troops and equipment together in sufficient size to bring immediate combat power. While traveling, commanders have an opportunity to conduct enroute planning and receive intelligence updates. Moreover, the SDHSS do not require a fixed port because they can discharge combat power wherever there is a ten-foot draft and an acceptable beach gradient—consequently they can enable surprise and thwart enemy anti-access strategies.<sup>27</sup>

## **CONCLUSION**

The Army needs to wholeheartedly pursue innovative approaches and new technology as it transforms for the 21st Century. This not only includes the Interim and Objective force, but also the transportation assets that will allow us to achieve our deployment timelines. The 2001 National Security Strategy (NSS) states, “Our response must take full advantage of strengthened alliances, the establishment of new partnerships with former adversaries, innovation in the use of military forces, modern technologies, . . .”<sup>28</sup> High-speed sealift uses modern technologies and, in conjunction with pre-positioned equipment, provides the Combatant Commander a unique transformational capability to deter or swiftly defeat an aggressor.

The Army’s Objective Force, coupled with high-speed sealift, has the potential to achieve the Army’s force projection timelines of putting a combat-capable brigade anywhere in the world within 96 hours, a full division in 120 hours and 5 divisions on the ground within 30 days. The civilian market will take high-speed sealift only so far, but the Army, capitalizing on this new technology, can leverage the capability and use it to achieve its deployment timelines. It may be more effective to continue leasing the vessels, but without significant resources being applied to the program the civilian companies may not continue to advance the design and

technology. High-speed sealift also supports the use of an intermediate staging base (ISB) transportation hub located outside of the theater which minimizes the reliance on the fixed SPODs and APODs. Purchasing high-speed sealift allows the Army to control the transportation assets required to ensure combat forces are available when required and truly transforms the Army into a multi-capable force for the 21<sup>st</sup> Century. The following Army Science Board finding emphasizes the importance of improving force projection capabilities:

The Army has committed tremendous resources to address strategic mobility for the first '10,000 miles' of the deployment process such as the Army Strategic Mobility Program (ASMP), infrastructure improvements, pre-positioned stocks, and other enablers. However, the final delivery phase into a theater of operations, the 'last 1000 yards,' has continued to present significant difficulties for force projection operations. The last 1000 yards represents the critical link or seam between strategic lift and actual, assured entry into the theater of operations. Strategic maneuver must incorporate the ability to assure the access of our future rapid projection force into any future theater of operations. The concept of assured access is not new; today we have limited airdrop and Joint Logistics Over The Shore (JLOTS) capabilities. Recent deployments, such as those into Somalia and Albania, highlight the fact that we have yet to solve the problem of assured access. Clearly, this force projection weakness must be addressed in order to ensure rapid, early, and continuous entry into any theater of operations.<sup>29</sup>

High-speed sealift helps the Army accomplish this last 1000 yards shortfall, helping to bridge the gap between strategic lift and actual, assured entry into the theater of operations. High-speed sealift uses modern technologies and, in conjunction with pre-positioned equipment helps create a seamless intermodal system that will maximize throughput. Utilizing high-speed sealift technology, complete force packages can be delivered to a theater of operation quickly, with limited RSOI operations while providing the Combatant Commander a unique transformational capability to deter or swiftly defeat an aggressor. The Army needs to pursue this revolutionary technology with the same enthusiasm it has pursued the Interim Brigade Combat Team (IBCT). Rapid advances in technology have shown that the newer high-speed sealift vessels will be faster, bigger and have shallower drafts. High-speed sealift used in conjunction with pre-positioned equipment helps create a seamless intermodal system that will maximize the throughput, helping to bridge the gap between strategic lift and actual, assured entry into the theater of operations and completing the last 1000 yards shortfall.

Word Count: 6,475



## ENDNOTES

- <sup>1</sup> Congressional Budget Office, Moving U.S. Forces: Options for Strategic Mobility, (Washington D.C.: U.S. Government Printing Office, February 1997), page 23.
- <sup>2</sup> Department of the Army, Army Pre-Positioned Land, Field Manual 100-17-2, (Washington D.C.: U.S. Department of the Army, 16 February 1999), page 1-3.
- <sup>3</sup> Army Science Board, Enabling Decisive Strategic Maneuver for the Army Beyond 2010, (Washington D.C.: U.S. Department of the Army, August 1999), page A-3.
- <sup>4</sup> Army Science Board, Technical and Tactical Opportunities for Revolutionary Advances in Rapidly Deployable Joint Ground Forces in the 2015-2025 Era - Volume IV - Support and Sustainment Panel Report, (Washington D.C.: U.S. Department of the Army, April 2001), page D-4.
- <sup>5</sup> Chairman of the Joint Chiefs of Staff, National Military Strategy of the United States of America, Washington D.C.: Pre-Decisional DRAFT 09/19/02, page 22.
- <sup>6</sup> Ibid., page 27.
- <sup>7</sup> Field Manual 100-17-2, page 1-3.
- <sup>8</sup> Department of the Army, Army Pre-Positioned Afloat Operations, Field Manual 100-17-1, (Washington D.C.: U.S. Department of the Army, 27 July 1996), page 1-2.
- <sup>9</sup> Army Science Board, Technical and Tactical Opportunities, page D-5.
- <sup>10</sup> Field Manual 100-17-2, page 1-1.
- <sup>11</sup> Field Manual 100-17-1, page 1-2.
- <sup>12</sup> Kenneth Hickins, MAJ. "Commentary – Strategic Mobility: The U.S. Military's Weakest Link," Army Logistics Magazine, Nov-Dec 2002
- <sup>13</sup> Donald H. Rumsfeld, 2001 Quadrennial Defense Review Report, (Washington D.C.: September 30, 2001), page 26.
- <sup>14</sup> Ibid., page 27.
- <sup>15</sup> High Speed Vessel concept paper, Available from <<http://www.nwdc.navy.mil/HSV/ConceptHSV.asp>>; Internet; Accessed October 8, 2002.
- <sup>16</sup> Christian Bohmfalk, "Marines Getting Good Results with Australian High-Speed vessel," Inside the Navy, Oct 15, 2001.
- <sup>17</sup> Charles W. Fletcher, Brigadier General, Commander 3<sup>d</sup> COSCOM.
- <sup>18</sup> Nigel Gee, "Future Design Trends in High Speed Vessels," Future Developments Conference, 2000, page 6.

<sup>19</sup> Congressional Budget Office, page 66.

<sup>20</sup> Field Manual 100-17-1, page 1-2.

<sup>21</sup> Ibid., page 4.

<sup>22</sup> General Accounting Office, Afloat Prepositioned: Not all equipment meets the Army's readiness goals, (Washington D.C.: U.S. General Accounting Office, July 1997), page 7.

<sup>23</sup> Owen Spivey, "High Speed Sealift (HSS) INCAT 046 CAT Evaluation," Army Logician, Jan-Feb 1999, page 1-6.

<sup>24</sup> Marine Log, "High Speed Ferries: Upping the knots and lowering the risks", July 6, 1998, Available from <<http://www.marinelog.com/DOCS/hij.html>>; Internet; Accessed October 8, 2002.

<sup>25</sup> Don Hinrichsen, The Coastal Population Explosion, The Next 25 Years: Global Issues, Available from <[http://www.nos.noaa.gov/Products/retiredsites/natdia\\_pdf/3hinrichsen.pdf](http://www.nos.noaa.gov/Products/retiredsites/natdia_pdf/3hinrichsen.pdf)>; Internet; Accessed January 2, 2003.

<sup>26</sup> Army Science Board, Enabling Rapid and Decisive Strategic Maneuver for the Army After 2010, (Washington D.C.: U.S. Department of the Army, August 1999), page M-26.

<sup>27</sup> Army Science Board, Technical and Tactical Opportunities, page D-12.

<sup>28</sup> George W. Bush, The National Security Strategy of the United States of America (Washington D.C.: The White House, September 2002), page 14.

<sup>29</sup> Army Science Board, Technical and Tactical Opportunities, page D-6.

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