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The 2006 Quadrennial Defense Review Report (QDR) places an emphasis on expeditionary forces and reducing the United States' footprint overseas. Although Joint Logistics Over-the-Shore (JLOTS) is not specifically mentioned in the QDR, it is the enabler that makes this objective achievable. JLOTS is the process of loading and unloading of ships without the benefit of a deep draft-capable, fixed port facility. JLOTS is a very complex operation involving many different ship types and sizes moving equipment and cargo from the sea to in most cases a bare beach. It can be very dangerous and is susceptible to even slight changes in weather. JLOTS is not a viable capability due to its extreme susceptibility to environmental factors, a failure to implement lessons learned and recommendations for improvement, and inadequate training opportunities. This paper details improvements that should be made to JLOTS to make it a more efficient process. However due to the environmental sensitivity of JLOTS, these recommendations can only mitigate the problem of JLOTS not being viable and do not resolve the problem altogether.

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Is Joint Logistics Over-the-Shore a Viable Capability?

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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23 October 2006

Abstract

Is Joint Logistics Over-the-Shore a Viable Capability?

The 2006 Quadrennial Defense Review Report (QDR) places an emphasis on expeditionary forces and reducing the United States' footprint overseas. Although Joint Logistics Over-the-Shore (JLOTS) is not specifically mentioned in the QDR, it is the enabler that makes this objective achievable. JLOTS is the process of loading and unloading of ships without the benefit of a deep draft-capable, fixed port facility. JLOTS is a very complex operation involving many different ship types and sizes moving equipment and cargo from the sea to in most cases a bare beach. It can be very dangerous and is susceptible to even slight changes in weather. JLOTS is not a viable capability due to its extreme susceptibility to environmental factors, a failure to implement lessons learned and recommendations for improvement, and inadequate training opportunities. This paper details improvements that should be made to JLOTS to make it a more efficient process. However due to the environmental sensitivity of JLOTS, these recommendations can only mitigate the problem of JLOTS not being viable and do not resolve the problem altogether.

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INTRODUCTION AND THESIS

Joint Logistics Over-the-Shore is the process of loading and unloading of ships without the benefit of a deep draft-capable, fixed port facility.[1] Joint Logistics Over-the-Shore (JLOTS) is a very complex operation involving many different ship types and sizes moving equipment and cargo from the sea to in most cases a bare beach. JLOTS can be very dangerous and is susceptible to even slight changes in weather. JLOTS is not a viable capability due to its extreme susceptibility to environmental factors, a failure to implement lessons learned and recommendations for improvement, and inadequate training opportunities.

BACKGROUND

JLOTS is not new to the military establishment. Since the Army went ashore at Veracruz, Mexico in 1847[2] the United States has been practicing moving logistics over-the-shore. This process of moving troops and their equipment from sea to shore enabled the United States' victory in the Pacific Theater during World War II. However, the grandest example of Joint Logistics Over-the-Shore was the Allied invasion of France, Operation OVERLORD. This operation was months in planning, involved many specialized types of shipping, and required realistic training to ensure success. Artificial harbors were built that were capable of offloading vehicles and cargo; large landing craft called tank landing ships were designed to be able to drive onto the beach to discharge tanks, troops, and all types of cargo; and barges were utilized to ferry equipment from British ports directly to the Normandy beaches.[3] The JLOTS that the United States military practices today is similar to

[1] Joint Chiefs of Staff, *Joint Pub 4-01.6 Joint Logistics Over-the-Shore*, (Washington, DC.: GPO, 2005), xi.
[2] Marshall, Peter, and David Manuel, *Sounding Forth the Trumpet*, (Grand Rapids: Baker Book House Company, 1997), 201.
[3] Botting, Douglas, *The Second Front*, (Alexandria, VA: Time Life Books, 1978), 47, 200.

that of World War II, except in scale, but has the same purpose; to sustain the military force on a foreign shore.

The JLOTS environment today is similar except in scale. JLOTS involves large ocean-going vessels anchoring off shore where cargo unloading takes place. There are two major categories of shipping involved: roll-on/roll-off and containerized cargo ships. Roll-on/roll-off (RO/RO) ships have ramps on which rolling stock (trucks, tracked vehicles, etc.) simply drives on/off the ship and onto a pier. Containerized shipping, referred to as Lift-on/Lift-off (LO/LO), requires cranes to offload the International Organization for Standardization (ISO) 20 or 40 foot long containers. RO/RO ships require a roll-on/roll-off discharge facility (RRDF) made by floating modular causeway sections tied up alongside the RO/RO ship. The RO/RO ship's ramp rests on the RRDF where rolling stock is driven to await further transport to the shore.

There are several different vehicles that may be used for the final transportation to the shore. The most common is the use of a logistics support vessel (LSV). Unless already forward deployed to the operating area, LSVs have to be transported on specially contracted ships. The LSV ties up to the RRDF and the rolling stock is driven onto the LSV which then departs for the shore. On the shore there are multiple options for discharging the vehicles. Several types of LSVs are capable of driving onto the beach thereby allowing their cargo to simply drive through the surf to dry ground. LSVs that do not have this capability must unload at either a floating causeway pier or the elevated causeway system (ELCAS). The ELCAS is a temporary pier elevated on piles that can extend up to 3000 feet from the beach.[4]

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[4] Joint Chiefs of Staff. *Joint Pub 4-01.6 Joint Logistics Over-the-Shore.* (Washington, DC.: GPO, 2005), IV-9.

Discharge, assembly, and installation of the ELCAS can take between 7 and 14 days depending on weather conditions and the length of the pier being constructed.[5]

Discharging cargo from a container ship requires an additional ship, an auxiliary crane ship to lift the containers to the LSV. For this type of cargo the LSV is typically a section of floating causeway on which the containers are stacked. A tug boat is then used to move the causeway section to the ELCAS where a crane lifts off the containers.

This rudimentary description of JLOTS is provided to show the complexity of the system and the numerous different parts involved. JLOTS is more complex than the above description. Some of these complexities will be described in greater detail below.

JLOTS SYSTEM LIMITATIONS AND PROBLEMS

JLOTS is a complex process that is greatly affected by the environment. Weather conditions have adverse affects on cargo discharge at sea, LSV transport from ship to shore, and on cargo discharge over the beach. The optimal operating condition for JLOTS is below sea state two as measured on the Pierson-Moskowitz scale.[6] That equates to a wave height of less than three feet and wind speeds at or below 12 knots. JLOTS operations at sea state greater than two must either cease or operate at greatly reduced speeds. High sea state affects several aspects of cargo discharge to LSVs. Crane operations moving cargo to an LSV becomes very dangerous due to severe pendulation of the crane load. The different motion between the large sealift ships and the much smaller LSVs and RRDFs creates a dangerous relative motion problem between the ships and the LSVs and RRDFs.[7] Additionally, during high sea states all LSVs must reduce speed. Containers being moved

[5] Robbins, LTC Keith (USA). Intermodal Programs Team at U.S. Transportation Command. Interview conducted by author. Newport, RI. 2 October 2006
[6] Joint Chiefs of Staff. *Joint Pub 4-01.6 Joint Logistics Over-the-Shore.* (Washington, DC.: GPO, 2005), G-2.
[7] Ibid, VI-16.

via causeway ferries are even more susceptible to changes in sea state. Since these vessels are basically flat barges without protection from waves breaking over the sides, container discharge operations usually must stop at sea states greater than two. On the shore, causeway piers can function up to sea state three (up to a wave height of 4 feet) while receiving rolling stock.[8] Container cargo must be discharged at an ELCAS due to the requirement for a crane. Wave height and length do not directly impact cargo operations at the ELCAS. However, due to the danger at sea and the slower speed of the LSVs, operations at sea states greater than two are not worth the risk of personnel injury or equipment damage that may occur.[9]

The objective of JLOTS is to bring equipment ashore after the beach and surrounding areas have been secured. So while JLOTS is not intended to rapidly discharge equipment for an assault, the Joint Force Commander does have some expectations to how quickly his supporting equipment will be available. Joint Publication 4-01.06 provides data in the way of throughput estimates for container and rolling stock discharge. These estimates were proven inaccurate during Ocean Venture 93, a JLOTS exercise conducted in the summer of 1993. One of the key objectives of that exercise was to validate the planning factors found in the joint publication.[10] Among the many findings of that exercise was that discharge rates were overstated in the joint publication. The container discharge rate for the exercise was 60 percent of the stated planning factor in Joint Publication 4-01.6 and the RO/RO discharge rate was 30 percent of that in the publication.[11] These results came from the transfer of over 800 containers and 612 pieces of rolling stock from sealift ships.[12] The results of Ocean

[8] Ibid, VIII-3.
[9] Ibid, VIII-1.
[10] Department of Defense. *Joint Logistics Over the Shore III Technical Report*. (Washington, DC.: GPO, 1994), vi.
[11] Ibid, 1-15, 1-18
[12] Ibid, 1-15, 1-18.

Venture 93 are over 16 years old but the latest version of Joint Publication 4-01.6 dated 5 August 2005 still contains the same throughput estimates as were critiqued in the 1993 exercise. The lack of accurate planning figures makes it difficult for the JLOTS commander to give the Joint Force commander a realistic estimate for when his equipment will be available for operations.

JLOTS is a joint system with the Army and Navy as the major participants. Each service component has its distinct responsibilities and several overlapping roles. Both services assemble and maintain RRDFs and floating causeway piers and operate LSVs. The Army's RRDF is substantially different from the Navy's. The Army RRDF is more stable than the Navy RRDF and its size and stability make it practical to stage vehicles on the platform while awaiting arrival of LSVs. Additionally, its design makes it easier for LSVs to come alongside and safer for mooring and is therefore preferred over the Navy RRDF by LSV pilots.[13]

The causeway piers operated by both services have significant differences as well. The Army system is wider and allows trucks to turn around at the sea end of the pier to reach trailers on lighters. Trucks on the Navy pier have to back up the entire length of the pier for the same type of operation. It is also much easier for the LCU-2000 (an LSV capable of carrying large RO/RO loads) to mate with the Army pier.[14] Overall, operations at the Army causeway pier are safer and much more efficient than those conducted over the Navy causeway pier.

The findings mentioned in the preceding two paragraphs are from the Ocean Venture 93 JLOTS exercise but they are still applicable today. That exercise report obsered that

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[13] Ibid, 1-21.
[14] Ibid, 1-30.

independent development of JLOTS systems by the services resulted in interoperability problems.[15] It further recommended that the causeways systems used to configure the RRDFs and causeway piers should be standardized, and the Navy should develop a causeway system completely compatible with the Army system.[16] The latest edition of Joint Publication 4-01.6 still references the different RRDFs and causeway piers operated by each service. The joint publication describes the differences between the Army and Navy RRDFs without mentioning the advantages of the Army system as delineated in the Ocean Venture 93 exercise. Similarly, the Army and Navy causeway piers are explained in detail without mentioning which one is safer or more efficient. The Ocean Venture 93 recommendations were overlooked when the joint publication was updated and thereby a costly exercise with meaningful lessons was lost.

Because JLOTS is a complex and dangerous operation, extensive training is required. The Commander, United States Transportation Command (TRANSCOM), is responsible for all JLOTS related programs including training.[17] TRANSCOM also plans, coordinates, and executes the annual JLOTS training schedule.[18] These exercises are very expensive and are occasionally conducted overseas. Expenditures on past JLOTS exercises have ranged between $6 million on the low end to as high as $27 million and may last as long as 6 weeks.[19] Exercise scenarios attempt to replicate potential real world use of JLOTS to include sustainment of forces ashore and disaster relief operations. Because of the high dollar cost, detailed planning, and time required, only one JLOTS exercise is scheduled each year.

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[15] Ibid, 1-35.
[16] Ibid, 1-23.
[17] Joint Chiefs of Staff. *Joint Pub 4-01.6 Joint Logistics Over-the-Shore.* (Washington, DC.: GPO, 2005), I-2.
[18] Robbins, LTC Keith (USA). Intermodal Programs Team at U.S. Transportation Command. Interview conducted by author. Newport, RI. 2 October 2006
[19] Ibid.

While these exercises are valuable, they consistently reveal a lack of proficiency and system knowledge. The after action report for the Ocean Venture 93 exercise attributed the failure to achieve throughput rates for container and RO/RO discharge to a lack of training.[20] In 2001, the TRANSCOM commander stated that the readiness of JLOTS capabilities was a concern due to a decline in exercises. He further commented that JLOTS must be exercised regularly and realistically in order to sustain a ready and reliable capability.[21] The after action report from the 2004 JLOTS exercise in Honduras listed a need for more JLOTS classroom training prior to the actual exercise. Damage to several pieces of equipment during the exercise was attributed to operator error and to unfamiliarity with the equipment.[22] Continuing this theme, a statement from the after action report for the 2005 exercise was, "JLOTS proficiency is not being maintained with the current training schedule," and that equipment operators needed more time at the controls in order to get proficient.[23] As of this date, the after action report for the 2006 JLOTS exercise was not available.

Operation RESTORE HOPE, which provided humanitarian assistance to Somalia in 1992-1993, would have been an ideal operational use of JLOTS. JLOTS is primarily designed to sustain forces ashore. During Operation RESTORE HOPE, the desire was to utilize JLOTS to deliver Army sustainment cargo in support of the humanitarian assistance mission. The problem was an almost constant 20 knot prevailing wind from sunrise to

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[20] Department of Defense. *Joint Logistics Over the Shore III Technical Report*. (Washington, DC.: GPO, 1994), 1-13.
[21] U.S. Congress. Senate. Armed Services Seapower Subcommittee on Strategic Airlift and Sealift Imperatives for the 21st Century. 107th Cong., 1st sess., 26 April 2001.
[22] Surface Deployment Distribution Command. *After Action Report JLOTS04*. Power Point presentation. April 2004.
[23] Surface Deployment Distribution Command. *After Action Report JLOTS05*. Excel spreadsheet. 2005.

sunset.[24] The wind caused a sea state of four plus with wave heights in the seven to eight foot range.[25] The sea state made RO/RO and LO/LO operations impossible. Additionally, a float on/float off (FLO/FLO) vessel had to sail 500 miles south to Mombassa, Kenya to discharge its cargo which was then floated back to Mogadishu via barge.[26] This, in addition to other problems encountered with the draft of the Army prepositioning ships added much time, effort, and cost to the objective of sustaining the forces ashore.

Technological solutions are being sought to mitigate the adverse effects of sea state on JLOTS. One such potential solution is the Rapidly Installed Breakwater System (RIBS). RIBS is a floating breakwater that is intended to provide a sheltered area from waves and currents.[27] The problem with RIBS as currently designed is that it can only operate in sea state three. RIBS is designed to reduce the effects of sea state three down to sea state two or below.[28] So even had RIBS been in place in Somalia, JLOTS still could not have been utilized during Operation RESTORE HOPE due to sea state limitations.

JLOTS REDEFINED?

The term JLOTS is used for many different operations and some that do not involve the systems discussed above. During Operation UNIFIED ASSISTANCE (tsunami relief operations in Indonesia), JLOTS systems like causeway piers and sealift ships with RRDFs were not employed. However, this operation has been referred to as an example of JLOTS in practice.[29] While it is accurate to state that logistics did move over-the-shore, it is misleading

[24] Perkins, Vice Admiral James B., III (USN retired). Emory S. Land Chair of Merchant Marine Affairs at the Naval War College, interview by author, Newport, RI 6 October 2006.
[25] Joint Chiefs of Staff. *Joint Pub 4-01.6 Joint Logistics Over-the-Shore*. (Washington, DC.: GPO, 2005), G-2.
[26] Perkins, Vice Admiral James B., III (USN retired). Emory S. Land Chair of Merchant Marine Affairs at the Naval War College, interview by author, Newport, RI 6 October 2006.
[27] Briggs, Michael J. *Analytical and Numerical Models of the RIBS XM99 Ocean-Scale Prototype.* (Vicksburg, MS.: Engineer Research and Development Center Coastal and Hydraulics Lab, 2001), ii.
[28] *Current Army Watercraft Systems*. Army. (October 2005), 336.
[29] Dyson, Meja A. *Navy Teams with Army for Joint Humanitarian Exercise*. (Military.Com. 27 June 2006), 2.

if one believes that all the equipment and systems that are typical of a JLOTS operation were in place. In Indonesia over 1,100 tons of food, potable water, medical, habitability, and other relief supplies were moved to the shore by carrier based helicopters.[30] Additionally, heavy lift helicopters and landing craft air cushioned (LCAC) of the Expeditionary Strike Group (ESG) delivered over 87 tons of material on a daily basis.[31] This real world event demonstrated a capability to deliver material from ships at sea but not the magnitude of material and equipment that could be delivered over-the-shore during a JLOTS operation.

A recent example of JLOTS being used to support combat operations was in the port of Kuwait. The Kuwaiti naval base lacked the capacity for the heavy throughput required to sustain Coalition Forces and the nearby commercial port was too shallow for the deep draft sealift ships. The solution was the installation of an ELCAS at the naval base to augment the existing facilities. The ELCAS was in operation from October 2003 through October 2005. During this period over 3,000 ammunition containers and 18,000 pieces of equipment were unloaded at the ELCAS.[32] This was a partial use of JLOTS as material was not being delivered from ships anchored off the coast using RRDFs.

The term JLOTS should not be used anytime material is moved ashore without the use of a port facility. If this were to be the definition then every time an ESG conducted an amphibious landing with the embarked Marine Expeditionary Unit it would be considered JLOTS. Because JLOTS is such a complex process of ships, LSVs, and floating piers, it needs to be classified separately from operations like Operation UNIFIED ASSISTANCE. The capability that is JLOTS requires specialized training and technology in order for it to be

[30] Meyers, CDR David C. (USN), *Operation Unified Assistance*. (Supply Corps Newsletter. Mar/Apr 2005), 3.
[31] Ibid. page 3.
32 Robbins, LTC Keith (USA). Intermodal Programs Team at U.S. Transportation Command. Interview conducted by author. Newport, RI. 2 October 2006.

a viable capability. If we do not maintain the integrity of this definition we run the risk of losing this specific skill set. Everyone will claim they are able to *do JLOTS* without anyone really understanding what this means. Moving material over-the-shore via helicopter from an aircraft carrier and via LCAC from the ESG should not be defined as JLOTS. JLOTS is used to move significant amounts of heavy equipment ashore without benefit of a port facility. Operation UNIFIED ASSISTANCE and Marine amphibious operations are not examples of JLOTS.

HOW DO YOU MAKE JLOTS VIABLE?

As previously shown, JLOTS is extremely susceptible to sea state conditions. This is difficult to overcome even with the application of RIBS technology. If however, the operation, could be conducted at greater speeds (i.e. the transporting of cargo from sealift ships to the shore), then during periods of sea state two or less, more cargo could be discharged. There are currently seven different classes of LSVs capable of conducting JLOTS operations. Six of these classes have top speeds when fully loaded in the 7 to 12 knot range. The Navy LCAC however has a top speed of 40 knots when fully loaded.[33] Replacing the LCU-1600 and the LCU-2000 classes of LSVs with LCACs can reduce offload times by as much as 27 percent.[34] The LCAC is also much easier to load and unload and is capable of traveling at 50 knots on the return trip from the shore. The LCAC however cannot do the JLOTS LSV role alone as it cannot efficiently load, unload, and transport ISO containers. The LCAC is most valuable when transporting rolling stock. The causeway ferries and Frank S. Besson Class LSV are best suited, and therefore necessary for container

[33] Higgins, Sean P., and David A. March. *Analysis and Evaluation of High Speed Ferries for use as Logistic Support Vessels in Support of Joint Logistics Over-the-Shore*. (Monterey, CA.: NPG, 2002), 20.
[34] Thede, Peter J., Richard C. Staats, and William S. Crowder. *Assessment of the Heavy Lift Landing Craft, Air Cushioned*. (McLean, VA.: Logistics Management Institute, 1995), 3-2.

transport. Additionally, the Frank S. Besson Class due to its capacity (2000 short tons compared to 60 for the LCAC)[35] would still be necessary for assisting the LCAC in transporting rolling stock.

The LCAC is currently not able to effectively operate in a JLOTS function due to problems of mating with the RRDF, however. The LCAC is restricted to moving cargo to and from Navy amphibious ships and not from standard sealift ships.[36] This problem of receiving cargo from the RRDF can be overcome with the use of an Air Cushioned Vehicle Landing Platform (ACVLAP). The ACVLAP is a floating platform that when positioned alongside an RRDF allows the LCAC to receive rolling stock. The LCAC drives up onto the ACVLAP. Rolling stock is then able to drive from the RRDF over the ACVLAP and onto the awaiting LCAC.[37] The 27 percent reduction in offload times assumes the availability of two ACVLAPs per JLOTS operation.[38] With the purchase of sufficient numbers of these platforms, LCACs could be fully integrated into JLOTS operations and the slower, smaller LSVs (LCU-1600 and LCU-2000) would no longer be required. By utilizing faster LSVs, JLOTS operations would become more efficient during the optimum sea state times.

While LCACs would increase the speed of JLOTS operations, their relatively small load capacity limits the advantage. Augmenting them with a high speed, larger capacity vessel would enhance JLOTS operations even further. The High Speed Ferry (HSV) is just that vessel. It is a wave piercing catamaran with a capacity to move 815 short tons of cargo

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[35] Higgins, Sean P., and David A. March. *Analysis and Evaluation of High Speed Ferries for use as Logistic Support Vessels in Support of Joint Logistics Over-the-Shore*. (Monterey, CA.: NPG, 2002), 20 – 21.
[36] Thede, Peter J., Richard C. Staats, and William S. Crowder. *Assessment of the Heavy Lift Landing Craft, Air Cushioned*. (McLean, VA.: Logistics Management Institute, 1995), 1-2.
[37] Ibid, 1-2.
[38] Ibid, 3-1.

at a speed of 35 knots in sea states greater than two with a draft of only 12 feet.[39] The HSV is an Australian designed vessel that was used extensively in support of the 1999 UN operation in East Timor. The Australians moved cargo and personnel from Darwin to East Timor, a distance of 430 miles, in only 12 hours.[40] The HSV has also been used by the Navy, during a September 2000 exercise that demonstrated its value in a JLOTS-like environment,[41] and during Hurricane Katrina relief efforts.[42] The September 2000 exercise illustrated the HSV's ability to carry rolling stock. As configured for the exercise, the HSV was capable of carrying 50 HMMWVs and six 5-ton trucks.[43]

Another HSV advantage is its cargo ramp. This ramp allows loading/unloading operations from the stern or alongside and it is capable of reaching almost any pier height.[44] All other LSVs are dependent upon a crane to discharge cargo to a pier and they are only capable of loading/unloading rolling stock via bow or stern. Coming alongside an RRDF allows the HSV to have more tie-down points on the RRDF thus giving it more stability than an LSV that is only attached at the bow or stern. The HSV can load cargo from an RRDF and then discharge to either a causeway pier of the ELCAS.

Cargo capacity, speed, the ability to operate in higher sea states, and the flexibility of the cargo ramp are all distinct advantages that the HSV has over other LSVs. However, the HSV does have two disadvantages, covered cargo decks and the inability to conduct beach operations. Because the HSV's cargo decks are covered, loading material by crane is not

[39] Higgins, Sean P., and David A. March. *Analysis and Evaluation of High Speed Ferries for use as Logistic Support Vessels in Support of Joint Logistics Over-the-Shore*. (Monterey, CA.: NPG, 2002), 32-34.
[40] Ibid, 12-13.
[41] Ibid, 13.
[42] Dodson, CDR Robert L., (USN). *Naval Operational Logistics Support Center Supports Hurricane Katrina Relief Efforts*. (Supply Corps Newsletter. Nov/Dec 2005), 3.
[43] Higgins, Sean P., and David A. March. *Analysis and Evaluation of High Speed Ferries for use as Logistic Support Vessels in Support of Joint Logistics Over-the-Shore*. (Monterey, CA.: NPG, 2002), 14.
[44] Ibid, 35.

possible.[45] All cargo must be loaded/unloaded via the ramp. Because of this the HSV should only be considered as an augment and not a replacement to the Frank S. Besson Class LSV or the causeway ferries. These types of LSVs are still necessary for the movement of containerized cargo. The second disadvantage of the HSV is its inability to offload cargo directly to the beach. To overcome this, the manufacturer has stated that future versions of the HSV could be equipped with a bow ramp that would enable beach operations.[46] Similar to using the LCAC, the addition of the HSV would greatly improve the efficiency of JLOTS operations.

Improving the efficiency of JLOTS by augmenting the LSV fleet with LCACs and HSVs is a step in the right direction but does not address the consistent problem of training nor instability at high sea states. While TRANSCOM only plans and funds one annual JLOTS exercise, the individual services may conduct as many training evolutions as desired. Many of the training deficiencies identified in the after action reports could be addressed by the individual services during unit level training. An example of service training occurred at the Naval Amphibious Base Little Creek, Virginia in September and October of 2006. During this particular exercise, the Navy assembled an ELCAS and then practiced unloading containers moved by LSV to the ELCAS.[47] These exercises are much smaller in scale than the annual JLOTS exercise and therefore are not as expensive. Preparations for the annual exercise should be similar to preparations made for a deployment. Every system should be tested and every participant should be thoroughly familiar with their roles and responsibilities and prepared for every possible scenario that could occur during an actual employment of

[45] Ibid, 39.
[46] Ibid, 41.
[47] Robbins, LTC Keith (USA). Intermodal Programs Team at U.S. Transportation Command. Interview conducted by author. Newport, RI. 2 October 2006.

JLOTS. Service level training should be treated as the preparations one makes for a final exam with the annual JLOTS exercise being the final exam.

As stated above, JLOTS exercises are costly and infrequent so the lessons learned from them should be seriously considered. The 1993 Ocean Venture exercise made the recommendation that Army and Navy systems should be similar. It even listed advantages of the one over the other. These observations were well documented but were not incorporated into newer versions of the joint publication covering JLOTS. There should be one configuration for RRDFs and one type of causeway pier and in both cases it should be the Army version as recommended in the Ocean Venture after action report.

CONCLUSION

The problems and inherent system limitations of JLOTS have been described along with recommendations that could serve to mitigate them. The addition of LCACs and HSVs to the LSV fleet along with addressing the training shortfall will not resolve the problem of making JLOTS a viable capability. So if it is too difficult, why not simply cancel the program and rely on the tried and tested capabilities of ESGs to assume this role? Amphibious operations conducted by the Navy / Marine Corps team do not have the complexity of JLOTS and are conducted more frequently so the operations are much more efficient. However, amphibious operations conducted by an ESG as stated above lack the ability to bring ashore the sustainment necessary for a large ground force.

Joint Vision 2010 stated a need to project power and to sustain that power.[48] JLOTS is the ideal method to sustain a force when a port facility is not available. Had the sea state conditions been acceptable JLOTS would have been the method used for bringing

[48] Joint Chiefs of Staff. *Joint Vision 2010*. (Washington, DC.: GPO, 1996), 24.

sustainment cargo ashore in support of Operation RESTORE HOPE in Somalia.[49] Joint Vision 2020 mentions the need to reduce logistics footprints.[50] Again JLOTS is the best solution to this objective as it makes a small footprint and does not require any supporting infrastructure on the foreign shore in order to operate.

These two joint vision documents from the Joint Chiefs of Staff state requirements that only JLOTS can effectively meet. A third and more recent document, the Quadrennial Defense Review Report (QDR) released in 2006, emphasizes expeditionary operations vice maintaining large overseas bases.[51] This objective of reducing the United States' presence overseas will be accomplished in part with seabasing. Seabasing is a loosely defined concept that refers to a collection of ships off the coast conducting operations to enable forces to operate without a large logistics footprint.[52] Seabasing is the concept of operating without a footprint on a foreign shore and JLOTS is the system that enables it. While the QDR or either of the joint vision documents do not mention JLOTS by name, they clearly state requirements that can only be met by employing JLOTS. These documents indirectly state a requirement for the Joint Force to have a viable JLOTS capability.

There are several ways that JLOTS can be improved; standardizing Army and Navy causeway piers and RRDFs, more service level training prior to the annual JLOTS exercise, and augmenting the LSV fleet with LCACs and HSVs. Much reference has been made to the1993 exercise. Had the recommendations made in the after action report of that exercise been implemented (i.e. training and standardizing service equipment) along with

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[49] Perkins, Vice Admiral James B., III (USN retired). Emory S. Land Chair of Merchant Marine Affairs at the Naval War College, interview by author, Newport, RI 6 October 2006.
50 Joint Chiefs of Staff. Joint Vision 2020. (Washington, DC.: GPO, 2000) 25.
[51] Department of Defense. Quadrennial Defense Review Report. (Washington, DC.: GPO, 2006), 53.
[52] *Seabase*. <http://www.globalsecurity.org/military/systems/ship/seabase.htm> (October 2006).

recommendations made by subsequent exercises, JLOTS would be more efficient than the capability is today. However, while all these recommendations will improve the efficiency of JLOTS they do not address the single most limiting factor, operating in sea states greater than two. If JLOTS is going to be a viable capability then these recommendations need to be implemented and technology pursued that will allow operations in sea states greater than two.

List of Acronyms

ACVLAP	Air Cushioned Vehicle Landing Platform
ELCAS	Elevated Causeway System
ESG	Expeditionary Strike Group
FLO/FLO	Float on/Float off
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HSV	High Speed Ferry
JLOTS	Joint Logistics Over-the-Shore
LCAC	Landing Craft Air Cushion
LCU	Landing Craft, Utility
LO/LO	Lift-on/Lift-off
LSV	Logistics Support Vessel
QDR	Quadrennial Defense Review Report
RIBS	Rapidly Installed Breakwater System
RO/RO	Roll-on/Roll-off
RRDF	Roll-on/Roll-off Discharge Facility
TRANSCOM	United States Transportation Command

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