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15. Abstract: Ninety-five percent of US equipment and forces deploy to OCONUS theaters via sealift. The countries that are the most likely theaters for regional conflict have limited airport and seaport facilities and, as a result, become chokepoints. The possible threats to forces and equipment at the limited ports around the world make the seaport of debarkation (SPOD) a critical vulnerability for the operational commander. As the US draws down the size of its force forward deployed the ability to rapidly project power becomes imperative to the accomplishment of the National Security Strategy. Sealift is an integral part of the solution and as such the operational commander must plan for actions at the port in the same manner that he plans for all other combat operations. The rise in the threat of asymmetrical attacks on his force when they are most vulnerable makes force protection at the SPOD critical. The threats vary from the use of WMD to safety hazards and all of the threats can be reduced by starting with well planned and expertly executed reception, staging, onward movement and integration (RSO&I) operations at the SPOD. It is the responsibility of the operational commander and his planners to identify possible threats, plan for smooth operations at the SPOD and enact procedures to reduce the threat to the force at the SPOD. An error during the initial deployment of forces can be almost impossible to correct once hostilities have commenced.			
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**The Seaport of Debarkation: A Critical Vulnerability for the Operational
Commander?**

By

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A paper submitted to 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 of the Department of the Navy.

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Introduction:

With fewer forces stationed overseas, the US military must be able to project forces worldwide. As a result US military strategy is dependent upon the ability to deploy successfully. The end of the Cold War was followed by the dissolution of the former Soviet Union and the threat of a superpower conflict ceased to exist. As stated by President George Bush, “The world remains a dangerous place and our ability to project power will underpin US strategy in the Post-Cold War era more than ever before. We must be able to deploy and sustain substantial forces in parts of the world where prepositioning of equipment is not feasible”.¹ This means that the operational commander must be able to assemble an overwhelming force, at a distant location expeditiously. One could argue that to respond quickly to a crisis OCONUS, forces must be deployed using strategic airlift. However, in the case of the deployment of a huge combat force and its equipment, sealift can move more, faster and cheaper than a fleet of aircraft.

For example, the capacity of one fast sealift ship (FSS) is equal to (130) C-5 aircraft. For the price of one FSS you will only get two C-5s and they will come with a 60 percent reliability rating compared to the 95 percent reliability rating of the eight FSS in the inventory.² As the services adapt for the future it is estimated that the Army’s proposed lighter force will still require four C-17’s every hour for four days to deploy the entire brigade within the four-day constraint.³ It is unlikely that we will have enough planes to dedicate to this Herculean task nor the proper third world infrastructure to

receive them in a timely manner. These facts outlined above and recent deployments such as Desert Shield/Storm provide the basis for my thesis.

Thesis

Ninety-five percent of US equipment and forces deploy to OCONUS theaters via sealift.⁴ The countries most likely to be the theaters for regional conflicts have limited airport and seaport facilities and as a result, become chokepoints. The possible threats to forces and equipment at the limited available ports around the world make the Seaport of Debarkation (SPOD) a critical vulnerability for the operational commander.

A major problem for the US military is that in order to deploy a force to a distant theater of operations it relies on concentrated force staging areas at selected ports abroad.⁵ “Today, more than ever, we need comprehensive, well thought-out plans that maximize the use of available assets, insuring that cargo flows through the port as efficiently as possible. Most planners agree that the time between initial arrival of cargo and personnel at a water port facility, and its operational employment is probably the period of greatest vulnerability for the deploying unit.”⁶

Desert Shield/Storm (all future reference will be to Desert Storm) was a huge deployment of US forces and more than 90% of US naval and military cargo deployed to the theater on ships.⁷ This was in addition to the huge amount of personnel and equipment that were transported by aircraft to support such a tremendous movement. One of the first issues faced by the operational commander is the deployment plan for the movement of forces and equipment into the theater. An error made during the

deployment of forces or equipment is difficult to correct once the campaign or major operation starts.⁸ It is the responsibility of the operational planners to ensure that priorities are set and the flow of forces is coordinated to ensure the optimal mix at the correct time. It is the commander's responsibility at all levels to ensure that these priorities are followed. The operational commander's problem is to balance the need for early deployment against the requirement to deploy tailored logistical units that maximize throughput of sustainable combat forces. The relationships between throughput volume and transportation infrastructure in the deployment area are critical because this is a potential chokepoint. It is important for the operational commander to optimize force closure capability and reduce the time that units spend at the port.⁹

Ports of Debarkation

Whether troops travel by land, sea or both does not alleviate the requirement for them to arrive at an airport of debarkation (APOD) or an SPOD. Once the ship or plane gets to its destination it must be unloaded and this is commonly done at a port with facilities to support the operation. Unfortunately, in most third world nations the transportation infrastructure is limited. Ports throughout the world fit into three general categories: a fixed port (improved); an unimproved port (denied or degraded); and bare beach (no port). The port in Damman, Saudi Arabia was a fixed port used for the debarkation of forces for Desert Storm. The port used in Mogadishu, Somalia is an example of a degraded and restricted port. As a third world nation, Somalia lacked modern infrastructure and what it did have had been damaged during the ongoing civil war.¹⁰ It is important to note that a fixed port does not imply that the port and its facilities will be at the level encountered in New York, Hong Kong or even Saudi Arabia.

Many fixed ports can be inaccessible to deep draft ships or have inadequate port facilities. In those cases the discharging of cargo would be greatly hampered. The possibility of having no port near the potential area of operations is also likely. In those cases the discharging of cargo would be conducted as an operation known as logistics over the shore (LOTS) or in a joint environment (JLOTS). When a unit is forced to resort to JLOTS the length of time needed to offload the cargo increases exponentially and the length of time spent at the SPOD increases simultaneously thus increasing the vulnerability of the operation. However, JLOTS and the equipment related to it have increased our ability to use alternate locations for offloading equipment and reducing our dependence on a single port location.¹¹

The greatest logistical advantage to US forces during Desert Storm was the opportunity to use the modern, deep-water ports in Saudi Arabia. The primary SPOD was Ad Damman followed by Al Jubayl with 60 and 20 piers respectively.¹² This is in comparison to the one pier that was available for use in Mogadishu, Somalia. The concrete wharves and Saudi land transport made ship-offloading time minimal. Modern port facilities permitted direct, rapid, and simultaneous discharge of high-tech containerships and roll-on/roll-off (RO/RO) ships. These ships discharged their cargoes directly to the pier for rapid drive away. Without modern port facilities, the usefulness of containerships and RO/RO ships diminishes rapidly and the length of time in the port increases.¹³ In the National Security Strategy President Bush alleges that the most likely location of future conflicts is in third world nations. Therefore, it is unrealistic to expect that such a modern facility would be available for future deployments. The type of port and its facilities greatly affect the rate of troop and logistical throughput.¹⁴ This fairly

rapid rate (when using modern facilities) or painstakingly slow rate (when using a degraded facility) must be considered by the operational commander and his/her staff. Failure to properly gauge the throughput capacity leads to the bottleneck that causes the port to be a critical vulnerability to the operational commander and a threat to the success of the mission.

Reception, Staging, Onward Movement and Integration (RSO&I)

Reception: At these ports the ships must be offloaded, equipment and units rejoined and further prepared for onward movement. The first task is called reception and it marks the end of the strategic leg of transportation and the beginning of the operational commander's task to form the troops and equipment into fighting forces. Critical to the success of this operation is the availability of the space, equipment and labor to discharge the vessels and clear the port. The type of port significantly affects the length of time spent on these operations especially during surge sealift when over 20 ships can arrive at one time. This was not an issue in Saudi Arabia where they had enough berths to handle the ships; however, in Somalia there was only one berth and so the ships stacked up in the harbor. The traffic jam in the harbor made it even more difficult to get the ships to the berth when their time arrived. This further slowed the reception process.¹⁵

Staging: The next part of the deployment is called staging and involves assembling, holding and organizing arriving personnel and equipment into units and forces, incrementally building combat power and preparing units for onward movement. This process includes the provision of life support for all units until they are self

sustaining. The biggest requirement during staging is space. For example, it takes over 47 acres to stage the Army's pre-positioned afloat heavy brigade.¹⁶

Onward Movement: At this point in the process units are moved from the staging areas to tactical assembly areas or other theater destinations. This also includes moving newly arrived personnel to their previously deployed units and sustainment supplies to the units or distribution sites.¹⁷

Integration: The final step is the synchronized transfer of authority over units to a designated commander for employment in the theater of operations. This is done once the units have achieved an established level of combat effectiveness.¹⁸

The length of time required for offloading and staging combined with space constraints and heavy concentration of personnel with equipment makes the port a prime target for the enemy. The average time spent in the staging base during Desert Storm was nine days. One observation made from the deployment to Saudi Arabia was that when the decision was made to initially deploy only combat troops the length of time spent on RSO&I operations was 15 days. This meant that elements of the 82nd Airborne Division arrived in Saudi Arabia on 8 August but were not in their battle positions until 23 August.¹⁹ The effects of RSO&I on the factor of time, cause the operational commander to consider space and force factors much more closely. The amount of time spent at the port is directly related to the flow of forces and the space available at the port. The longer the time those units spend at the port the greater the target of opportunity and increased vulnerability for the operational commander.

In an effort to rapidly project force the Army and the Marine Corps have ships loaded with equipment and ready to meet the troops to man the equipment at distant

locations. These Maritime Prepositioning Force (MPF) ships get the force and the equipment there faster but they do not reduce the staging time. It presently takes about ten days for Marines transported by air from the United States to arrive, marry up with the MPF equipment and be ready to engage the enemy.²⁰ The time required is in addition to the space requirement of 47 acres as mentioned above. As with the increase in the available lift assets the nation has procured since Desert Storm the MPF get the troops and equipment to the port faster but it does nothing to increase the throughput rate at a clogged port. The SPOD is a significant target specifically because it is a chokepoint. An increase in strategic lift does not ease the bottleneck; it only makes it worse. As demonstrated by Desert Storm and Operation Restore Hope in Somalia the need for strategic lift was not the constraining factor. The rate at which RSO&I operations were completed was the constraint.

On the battlefield, tactical commanders devise plans to reduce the dangers at chokepoints. The operational commander must do the same thing to reduce the danger of the chokepoint at the port. The port, as the constraint on the deployment system, must be protected from an interruption, which could further inhibit the flow of equipment and forces into the theater. This is an essential point that commanders at all levels must understand or they could inadvertently negatively affect the system. Typically as a force we are willing to accept risk in the rear area. However, while the operational commander is building the theater he can least afford to take such risk. As the theater matures the risk to RSO&I operations will diminish because of the amount of combat power on the ground.²¹

Potential Threats

An attack by enemy forces on an SPOD such as the port of Al Jubayl, Saudi Arabia during Desert Storm is always possible and the effect that it would have on the movement of forces and equipment into theater could be a “show stopper.” Unfortunately a traditional enemy attack at the port is by no means the only viable or most probable threat that must be considered by the operational commander. The Chief of Naval Operations (CNO), Admiral Clark, stated, following the attack on the USS Cole, “since the end of the Cold War, the threat of asymmetric warfare and terrorism has increased greatly.” In his guidance to naval forces following the Cole incident Admiral Clark emphasized that “we must improve the security of our transiting forces.” In order to do this it is important to analyze the possible threats to them when they are most vulnerable—in the SPOD.

The hallmarks of the post-Cold War world-- open societies, liberalized economies and new technologies-- also provide potential adversaries and sophisticated criminals with incentives and opportunities to target or exploit America’s transportation networks. The military depends on certain pieces of America’s transportation network when it deploys forces and equipment to a distant theater. An ambitious, comprehensive strategy is necessary to raise awareness of possible threats and employ adequate force protection measures to prevent them.²² This statement is true in both a peaceful (permissive) and wartime (non-permissive) environment.

Possible threats faced by the operational commander and forces at the SPOD fall into the following categories: Weapons of Mass Destruction (WMD), terrorist attacks, risks from utilizing foreign flagged ships, sabotage and safety related incidents.

-WMD: According to the National Security Strategy weapons of mass destruction are limited to nuclear, chemical and biological weapons. Some states already possess and are seeking even more capabilities in order to coerce and intimidate other states. For these nations they are not weapons of last resort but military weapons intended to overcome the US advantage in conventional forces and to deter the US from responding to aggression against our allies in regions of vital interest.²³ At the operational level, WMD have the potential to significantly impact operations, and under certain circumstances might be an operational “showstopper”.²⁴ In days past when sailors talked about a “dirty” port it meant a slimy harbor and unswept streets. Today the term refers to a port area that has been contaminated by an enemy lobbing a chemical, biological or nuclear missile into it and rendering it unusable by US forces.²⁵ The use of missiles to dirty a port is possible but not the only delivery option for WMD in a port. The use of cargo containers to conceal weapons, explosives, chemical and biological warfare agents and dirty nukes is not only possible but also probable. Only two percent of the containers arriving in US ports each year are actually inspected by US Customs. This statistic is substantially lower in other nations with lower budgets.²⁶ It takes three hours for five US customs agents to inspect a single container and the fact is that over 5 million 40-foot containers entered the US in 1999.²⁷ The military has increased its use of containers so dramatically that during Desert Storm there was a critical shortage of containers to pack equipment and supplies in for troops deploying to the theater. Contamination from just one container could render the port useless since chemical (CW) or biological (BW) do not destroy equipment but their persistence may render the equipment unusable for an extended period of time. The persistency of these agents would require extensive cleanup

and it is difficult to establish how clean you could get the port facilities to ensure no future contamination.

One of the main reasons enemies use CW and BW agents on a port is to deny or delay the timely movement of US forces into their region of the world. Even without a high number of casualties the effectiveness of troops operating in a contaminated environment can be reduced by as much as 60 percent. In addition, at a port utilizing host nation support, critical civilian employees might evacuate a targeted or contaminated area.²⁸ The very threat to use WMD may be enough to weaken certain coalition support and cause a nation to deny US access to its port facilities.²⁹

-Terrorist threats: The asymmetrical threat presented by the ever-increasing number of terrorist organizations throughout the world is interwoven into all of the threats highlighted in the list above. The events of 911 demonstrate that such organizations will use whatever means available to further their cause. The high concentration of troops and equipment at the SPOD make it a high value target for a terrorist group that is unable to compete with the US and its conventional capabilities. Terrorists can affect port activities using small boats as bombs as demonstrated by the attack on the USS Cole or the attack on the French oil tanker near Yemen. Terrorists can access WMD as well. For example an estimated 5 to 10 million pounds of chlorofluorocarbons are smuggled into the United States each year to supply the black market—a few pounds of a deadly biological or chemical agent destined for terrorist use therefore could elude detection by US Customs or Coast Guard.³⁰

-Use of foreign flagged ships: Foreign flagged cargo ships now carry better than 97 percent of US commercial imports and exports. The use of foreign flagged ships is

primarily the result of the decline in size of the US commercial vessel fleet. Since WWII the size of the fleet has gone down from 2300 ships to 115 ships.³¹ Many of these ships are registered in unaccountable flag of convenience countries like Liberia (which has been said to use ship registry revenues to help finance a brutal rebel faction in neighboring Sierra Leone) and Panama. Crews for most foreign flagged ships serving US trade are typically recruited from Third World countries, many with large Muslim populations, including Indonesia, the Philippines, Pakistan and states of the former Soviet Union. Foreign-flagged ships are used to an unnerving extent by the US Navy's Military Sealift Command (MSC), which often charters them for support services abroad. During the Persian Gulf War in 1990 and 1991, for example, MSC was able to charter foreign flagged ships to cover US flag capacity shortfalls. In fact, there were documented cases of foreign crews –many of them Muslim—refusing to bring US defense cargoes to the war zone.³²

There are debates over whether the issue about the credibility of foreign mariners is legitimate based solely on the person's nationality. For example Indonesia provides the world with 68,000 mariners, second only to the Philippines, and is home base for numerous radical Islamic and separatist organizations. The threat from these organizations was illustrated by the nightclub blasts in Bali that have been attributed to Indonesian terrorists with links to al Qaeda.³³ However despite the perception that a country is a haven for terrorists does not mean that all mariners are terrorists. The reliance on foreign flagged ships and foreign crews raises the issue of whether those operators or crews will support US operations in certain regions of the world. During Desert Storm the US was part of a coalition and advancing a cause that was supported by

the majority of nations throughout the world. Even during Desert Storm foreign flag vessels would not honor carriage commitments or carry certain cargos to certain destinations (for either political or safety reasons) during the surge periods. For example, the crew of the Japanese freighter, Sea Venus, which was carrying military vehicles refused to transport their load to Saudi Arabia. Some of these refusals were based on direction received from their government.³⁴ It is unlikely that the US will enjoy such unified worldwide support in future conflicts as demonstrated by world events today and therefore, these are risks that must be considered by the operational commander and efforts must be made at the strategic level to mitigate their effect.

-Sabotage: Utilizing a host nation port means that personnel from that country will be running the port and its facilities especially in a permissive environment. For the operational commander the issue becomes the loyalty and security clearances of the personnel working around US troops and sensitive equipment. It is difficult to secure the entire port and to protect against sabotage by the local nationals. It is possible that many of the nations out of which the US stages operations could have links to terrorist organizations. It is difficult to determine whether host nation employees would try to sabotage equipment being used for the movement of US troops and equipment in their port but it is not difficult to imagine how easily such acts could affect the operations in the staging base. Possible acts could affect food preparation; lift capabilities (cranes, forklifts, etc) and transportation assets just to cite a few examples.

-Safety: As in all US operations whether training or real world, operation safety is a vital issue that must be addressed by commanders at all levels. The port facilities used in many third world nations are not kept at the same level as those found in the US. It is

unlikely that they have to meet the standards in the workplace that are enforced in the US by the Occupational Health and Safety Organization (OSHA). Soldiers may be required to operate some of the equipment in the host nation port. They may not be familiar with the equipment or may be wearing protective gear. Both of these factors reduce the safety and speed of the operation. For example, a soldier in full protective gear is sixty percent less capable because of visibility and mobility restrictions not to mention the increased possibility of heat injuries. Planners must take into account time that is needed to train on host nation equipment or to wait for the arrival of US equipment to support port operations. In addition the heavy concentration of equipment and personnel in the confined space offered by many of the third world ports sets the stage for accidents. Operations in the SPOD should not be left out of the operational commander's risk assessment.

In addition to safety around heavy equipment the medical and sanitary aspects of having so many in such a small area must be considered or else combat effectiveness will be reduced from the onset of onward movement. As noted by General Pagonis in reference to operations in Desert Storm, sanitation facilities were an immediate concern and "all of our twenty-first century military technology could easily be undermined by prehistoric sanitation and health facilities".³⁵

The underlying common thread that ties the threats together is the length of time that forces and equipment spend at the SPOD. RSO&I operations that are not well planned and running smoothly cause chaos and frustration. Chaos and frustration lead to sloppy operations and make it easier for the enemy to infiltrate and impede port operations.

Force Protection Recommendations

All of the threats faced by our forces at the SPOD are viable possibilities and any one of them could significantly impact the operational commander's accomplishment of the mission. It is important to recognize potential threats and take actions to mitigate their potential effect on the forces and the mission. The list presented below is only a partial list of measures that may assist the operational commander and his/her planners in reducing the critical vulnerability of the force at the SPOD.

Improved RSO&I Operations: The port is a target because of the length of time that units spend there trying to reassemble into a combat force. All efforts made to streamline that process reduce the threat to the unit. One possible improvement would be combat loading ships and aircraft so that when the unit rolls into port the people and the equipment are one package. During Desert Storm in order to maximize lift capacity equipment was loaded specifically to maximize space. This meant that at the port units had to hunt for their equipment before they could even start preparing for onward movement. This caused considerable delays, misuse of space and in some cases, it forced units to leave without all of their equipment. The British learned this lesson when they jammed whatever they could into the first available ships in order to get forces moving rapidly to the Falklands. This was a political decision and one that the military planners thought that they could fix enroute to the Ascension Islands. Unfortunately the troops could not make the changes while at sea for various reasons and the poor port facilities at Ascension Island made offloading and reloading too time consuming to complete. In the

final analysis the time spent trying to organize the equipment when they got to the theater was greater than the time it would have taken to combat load.³⁶

Efforts should be made to ensure that the right forces are on the ground initially to organize the receipt of forces and equipment. These experts need to be allowed the opportunity recon and analyze the intelligence available to present the maximum throughput rate to the operational commander and his planners. The RSO&I process is not logistics, but a phase of operations heavily impacted by logistics. Units that approach it as a combat operation perform better. Success requires the same level of command emphasis, planning, rehearsal and attention to detail as other operations with less impact on the mission.³⁷ It does not make sense to have ships sitting in the harbor waiting to offload because more arrived than the infrastructure could support. Such predictions are an art as much as a science but many commanders focus only on getting troops to theater and not how long it takes to reassemble them with their equipment. During Desert Storm General Schwarzkopf made the decision to frontload combat troops into theater and as noted earlier this increased the time required for RSO&I. As in most war gaming exercises the actions at the port are assumed away and the planners forget that in Desert Storm an average of nine days was spent in the port. There must be a balance between logistical units and combat units because of the tradeoff between efficiency and force protection.

Security Force Emplacement: The employment of combat forces to secure the port initially in similar fashion to the way that we secure the airfields in a non-permissive environment would reduce the threat at the port. Upon securing the port it would have to be treated as a hostile area and security measures put in place as they would be forward

on the battlefield. The Coast Guard and the Navy could be part of the security team that would ensure that safety measures start in the harbor. The bottom line is that the port cannot be treated as a no-danger zone because the operations at the port can greatly impact the success of the operational commander's mission.

Multiple entry points: The more entry points there are the less vulnerable each is and the faster equipment and personnel can flow into the theater. Third world infrastructure makes this easier said than done. Systems such as JLOTS are an effort to make the limited number of ports available less of a constraint. The use of multiple entry points would require a change in doctrine and resources but based on the most likely theaters for conflict it is an option that should be exploited. Platforms such as the C-130 and its ability to land on any type of runway including dirt, demonstrates how flexibility provides viable options.

Stateside protection measures at Port of Embarkation (POE): Prior to departure from the ports in the United States every effort must be made to ensure that all containers are secured and that they have accurate load plans attached. During transit more troops should travel on the supercargoes in order to serve as a security force enroute.

Sophisticated inspection equipment: Port security is on the US agenda as companies try to improve security without drastically reducing efficiency. Companies such as Savi Technology, which developed the Total Asset Visibility (TAV) network for the Department of Defense, is working to develop an "end-to-end" tracking system for commercial cargo. TAV allows units to use radio-frequency identification devices in conjunction with satellites and software to track where a container is and whether it has been tampered with during its journey. TAV only works well if units know what is in

each container.³⁸ Knowing where the cargo is also allows the personnel at the port to properly plan for an efficient offload at the docks. In addition using gamma ray technology a cost effective Vehicle and Cargo Inspection System (VACIS) can reliably inspect a cargo container in less than 6 seconds.³⁹ It is important for future operations that innovative off the shelf technology is used to rapidly improve security of port operations.

Conclusion

If the US went to war this week, it would initially be less reliant on commercial foreign tonnage for the first sealift surge of military hardware and equipment. It will load cargo ships at more ports than it did for Desert Storm and the fleet will reach the Gulf with its supplies much faster. The MSC has replaced older tonnage and dramatically increased the RO/RO fleet since Desert Storm.⁴⁰ We have more C-17s in the fleet than during Desert Storm and the performance of the air bridge during the Afghan conflict has been impressive. However, the risk to forces has increased with the rise in the asymmetric warfare threat. This is a significant issue for the operational commander. As stated by the spokesman for the US Central Command, James R. Wilkerson said, “Our team places such a strong emphasis on supply timetables, because without a deliberate logistics plan you can’t have a successful military plan. Significant interruptions or distortions in the supply chain can invariably lead to significant delays on the execution side.”⁴¹ Any deliberate logistics plan accounts for all the actions that must occur at the port and to ensure success it must include plans to reduce the threats to successful port operations. The supply chain is only as strong or responsive as its weakest or slowest link. The SPOD represents that link.

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