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US Surge Sealift Capabilities: A Question of Sufficiency

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"With fewer US forces permanently stationed overseas, we must increase our capability to project forces abroad. . . . Our ability to rapidly project power worldwide depends on four strategic mobility enhancements: increased airlift capability, additional pre-positioning of heavy equipment afloat and ashore, increased surge capacity of our sealift, and improved readiness and responsiveness of the Ready Reserve Force." [1] -- General John Shalikashvili, US Army, Ret. Former Chairman, US Joint Chiefs of Staff

During the Cold War, US national security strategy required large forward-deployed forces in or near regions with a high potential for crisis. Most of the troops and materiel were stationed on land. Equipment and materiel for US-based reinforcements that were to deploy if war became imminent were also pre-positioned. With the bulk of the equipment and materiel for reinforcing divisions in place in selected theaters of operations, the primary strategic logistics mission during the surge phase of any conflict before 1989 was the timely movement of personnel from US aerial ports of embarkation to link up with their equipment staged in the theater of operations.

US national security strategy now rests primarily on projection of personnel and their equipment to a theater of operations. This change has significantly altered the strategic transporter's mission. The United States must be prepared to deploy all the equipment and personnel for 10 Army divisions, in addition to corps and theater support elements, and not to one theater of operations, but two. Plans based on the assumption of two nearly simultaneous major regional conflicts require approximately five Army divisions for each conflict. Virtually all Marine Corps and Air Force assets as well as the bulk of Navy forces must also deploy to fulfill the strategy.

The 1990-91 Gulf War and the intervention in Bosnia demonstrated that forward-deployed forces may have to be repositioned to meet emerging crises. Additionally, some forward-deployed forces may be called upon by other regional commanders in a crisis. So in addition to moving assets out of the United States, strategic transporters must be prepared to transfer large numbers of personnel and significant quantities of materiel from one overseas location to another.

Three of the four strategic mobility enhancements cited as essential by the former Chairman of the Joint Chiefs of Staff depend on improved sealift capabilities: pre-positioning afloat, surge sealift, and improved readiness and responsiveness of the Ready Reserve Force. This article examines recent trends in the US merchant fleet and new and unprecedented international agreements governing ocean transport that will significantly affect our merchant fleet and the US merchant seamen who crew it. The continuing decline of the US-flag merchant fleet, changes in ocean-going billets available to US merchant seamen, and new international training and certification requirements for all merchant seamen, regardless of nationality, play their parts individually and collectively in eroding the assumptions on which current US surge sealift plans rest. Unless steps are taken to modify current US practices, the cumulative effects of these changes could emerge as shortages of surge sealift personnel needed to carry out any national security strategy.

Surge Sealift Capacity

In the year 2000, the US armed services will rely on four sets of government-controlled surge sealift assets intended to deploy heavy equipment rapidly in a crisis. These ships have differing missions and response times during the surge

phase of any intervention operation.

- . The first ships to respond in a crisis are the vessels belonging to the Afloat Prepositioning Force. The Army has the equipment of one heavy brigade afloat, and the Marine Corps has three separate Maritime Prepositioning Squadrons that are designed to provide support for a Marine Expeditionary Brigade. The Marine Corps squadron based at Diego Garcia provided the support for the Marine Corps when it projected the first credible heavy ground force to reach Saudi Arabia during Desert Shield. All the ships are in full operating status with full ship crews, and are strategically located near potential crisis areas throughout the world. In most scenarios these vessels must be under way within four hours of notification to sail.
- . The second asset is the Military Sealift Command's fast sealift ships. These eight vessels, in reduced operating status with partial crews, are strategically located near US ports of embarkation. They must be capable of being activated within 96 hours of notification.
- . The third set of ships that the Department of Defense will call on are the 19 large, medium-speed, roll-on/roll-off vessels that are currently being procured and built. Eight of these vessels will join the Afloat Prepositioning Force; the ships currently at sea in that role will return to the Ready Reserve Force. The other 11 vessels will be strategically located in the United States and maintained in a reduced operating status with partial crews. These vessels have a response time comparable to that of the fast sealift ships: 96 hours to start movement to loading ports once notified.
- . The fourth surge asset consists of the ships of the Ready Reserve Force. These 96 vessels are strategically located near major US deployment seaports. Ready Reserve Force ships are maintained in four categories of readiness.[2] Depending on their respective missions, these ships must be capable of sailing to ports of embarkation within four, five, 10, or 20 days of notification. Ships with a four-day embarkation requirement have 10-person crews, while five-day embarkation ships have nine-person crews. Ships with response times of 10 and 20 days have *no* permanently assigned crew aboard. The Maritime Administration contracts the maintenance for these 10- and 20-day vessels, and contractors hire teams that service all the vessels under their contract. When these ships are activated a full crew complement must also be hired.

All of these ships rely on personnel of the US merchant marine to operate them. In normal times, the livelihood of US merchant mariners is dependent on the existence of a US flag merchant fleet. Currently, however, that fleet continues its recent downward spiral and can no longer be counted on to provide the required numbers of qualified personnel necessary to crew all surge sealift assets during a period of crisis.

The Declining US Flag Fleet

At the end of World War II the US merchant marine fleet dominated the oceans. With nearly 5000 ships, the US fleet carried half of all waterborne trade traveling between the United States and foreign nations. As of April 1996 only 319 US flag commercial ships remained, and they accounted for less than four percent of all waterborne trade traveling to and from US shores. Even as the US flag fleet has dwindled, however, the amount of cargo being imported and exported annually from US ports has increased from 117 million tons in 1950 to 967 million tons in 1995.[3] There are strong indications that the US flag fleet will continue to decline at an alarming rate.

In 1996 the average age of the 319 active commercial vessels in the US merchant fleet was 19 years. Of the militarily useful ships, breakbulk vessels averaged 25 years of service, while tankers averaged 21 years and intermodal ships 16 years. The useful life of these ship types ranges between 20 and 30 years. The long-standing cabotage requirement to build US flag ships in US shipyards imposes capital costs that deter US ship companies from investing in US-built vessels. As ships retire from the US fleet, companies are replacing them with vessels flying foreign flags and almost always operated by foreign crews. As of 30 September 1996, only 16 commercial vessels larger than 1000 gross tons were on order in all US shipyards. Nine of the tankers being built at Newport News are not for the US fleet; for the first time since 1957, they are being built for export.[4]

Second, new ship safety requirements for the tanker fleet were established by the Oil Pollution Act of 1990 in the aftermath of the *Exxon Valdez* disaster. These new standards will cause the older US tanker fleet to decline rapidly over the next several years. According to Coast Guard records, 54 of the 128 tankers in the fleet will be scrapped or sold before 2004. Most of these ships are single-hulled tankers that are too old to justify the expenses necessary to make them double-hulled, which is a key requirement of the 1990 act.

A third major concern is the fate of the US liner (container ship) fleet. Ship owners have said repeatedly that they cannot operate US flag vessels, pay US taxes, comply with stringent US regulations, crew with more expensive US seafarers, and still meet the competitive challenge in the international liner market.[5] To offset some of the added costs, the US government in FY 1995 provided \$216 million in operating differential subsidies in 26 separate contracts to support 59 US flag ocean-going liners. The owners of these ships have indicated that they will reflag them for commercial advantages when subsidies expire. Most of the contracts expired in 1997; the remaining subsidies expire by 2002.[6]

To help offset the prospect of losing all US flag liners, President Clinton in 1996 signed Public Law 104-239, a 10-year Maritime Security Act. This act was designed to provide subsidies of \$2.1 million per vessel, per year, for up to 47 US ships.[7] There are, however, significant concerns about this program. First, the new subsidies provide almost \$1 million less per vessel, per year, than allowed in the previous operating differential subsidies contracts. Second, there are 12 fewer ships authorized in this program, 47 compared to 59 in the old program. Finally, Congress authorized spending up to \$100 million a year on the ships for 10 years. The funds, of course, must be appropriated each year; there is no guarantee that all or any substantial portion of the authorized sum will actually be spent as intended in the act.[8] Ship subsidies compete with other federal non-defense spending such as entitlements.

Disappearing Ocean-Going Billets

The vessels involved in the new subsidy programs are not intended to be used in the surge phase of any operation. Their significance in this article is their contribution to the cumulative decline in the number of seagoing jobs aboard US flag ships and the adverse effects if the US liners would be reflagged. Those outcomes will affect significantly the number of sea billets available for US certified and licensed mariners. In April 1996 the US Maritime Administration reported that there were 7582 seagoing billets on ocean-going US flag vessels, including billets aboard government-owned reserve ships in active or reduced operating status.[9]

The international term used to describe the total number of individuals required to crew a vessel, or fleet of vessels, is called the "establishment." The US establishment is currently three crews for two ships, or a ratio of 1.5 mariners for each billet. This means that considering those on vacation or on sick leave, the current establishment is roughly 11,373 mariners. The Maritime Administration has indicated that approximately 2638 mariners would be required to activate all the ships in the Ready Reserve Force. This activation number is for the initial phase of any crisis and does not consider personnel in leave status. The establishment to *operate* the vessels beyond the initial four months would be closer to 4000 mariners. The Maritime Administration counts on filling the gap from the pool of mariners on leave from ships at the time as well as those with valid Merchant Marine documents and licenses but not actively sailing. During the 1990-91 Gulf War, for every six active mariners in the supportable pool, one mariner was employed crewing vessels in the Ready Reserve Force. The 1996 estimate of the supportable pool was approximately 8221 mariners.[10] So if 4000 mariners would be required to operate reserve fleet vessels in a prolonged crisis, the pool of qualified mariners will likely be insufficient both to crew the commercial fleet and at the same time to sail all surge sealift assets. The thesis of this article is that with recent and proposed unprecedented changes in the laws affecting the licensing and documentation of mariners, the pool of qualified merchant mariners available to crew the surge sealift ships will be significantly reduced over the next five years.

There has been a concerted attack on the 1884 Passenger Ship Act and 1920 Jones Act, with the intent to soften or eliminate the acts altogether. The belief of the opponents of these cabotage acts is that there will be economic benefits in opening our trade for foreign carriers to operate between domestic ports such as New York and Boston or Chicago and Cleveland. Proponents of the acts point to the economic benefits in shipbuilding and jobs that would be lost. They also see the possibility that other forms of transportation such as airlines and trains that operate under similar cabotage acts may find their domestic routes open to foreign operators if the Jones Act is eliminated.

The scope of this article does not allow for a comprehensive discussion of the economic implications of these acts; however, the elimination of the Jones Act would mean a drastic reduction in the US commercial fleet--to approximately 50 vessels--and the loss of 87 percent of shipboard billets.[11] New regulations (discussed later) will limit the ability of inland mariners to sail offshore. Abolishing these acts would therefore virtually eliminate any surplus pool of certified and licensed US merchant mariners.

Apart from issues related to the fate of the Passenger Ship Act and the Jones Act, the loss of billets is a continuing problem whose consequences require careful consideration. Federal agencies have examined the need for an available pool of mariners to sail strategic sealift assets.

. A 1994 GAO report stated that at that time the United States had sufficient merchant mariners qualified and capable of sailing surge sealift ships, but the study warned that the situation could change and should be monitored closely.[12]

. In December 1995 the US Navy published a study on manpower requirements for crewing strategic sealift assets.[13] The study examined four crewing options, one of which, use of Merchant Marine Reserve forces (which are US Naval Reserve personnel), was found to be the most costly and the most restrictive for the projected DOD scenarios.[14] The study, which concluded that the use of merchant mariners was the most cost-effective option, also made several key assumptions, some of which appear now to have been unduly simplified, even suspect, at the time of the study. The assumptions, which are important to the remainder of this analysis of future US surge sealift capacity, covered re-employment rights for mariners, crewing by every available mariner, and, most important, cross employment between competing maritime unions. The Navy study concluded that there would be a meager surplus of available officers and a shortfall of unlicensed mariners by the year 2005, but it did not discuss impending legislation that might affect the documentation and licensing of mariners.

One of the primary reasons merchant seamen did not sail surge sealift assets during the Gulf War was that they had no assurance of re-employment rights were they to leave their jobs to take short-term missions on surge sealift ships. Recognizing this problem, steps were taken to give US-flag merchant fleet sailors who elect to serve on ships in reduced operating status during the next conflict a decided advantage over their predecessors. With the passage of the Maritime Security Act in October 1996, US seafarers in time of war or national emergency now have the same basic re-employment rights as members of the reserve components of the armed forces.[15]

What was not taken into consideration at the time the 1996 act was passed is the dwindling size of the US-flag fleet and the new requirements of the International Safety Management Code. The shrinking US fleet makes it likely that in any future crisis or conflict, many US merchant mariners will be working on vessels operating under foreign flags. These sailors are not guaranteed the same basic re-employment rights that their counterparts in the US flag fleet enjoy. Consequently, we can only speculate about the number of men and women who might be inclined to leave foreign flag ships that are not bound by the Maritime Security Act to sail surge sealift assets if they are not certain of re-employment by their shipping companies at the conclusion of the crisis.

Three additional conditions apply here. First, as a result of new requirements for training and certifying their personnel, US shipping companies may be reluctant to release members of their ship crews in a crisis. Furthermore, as described below, it is increasingly possible that the requirements of the International Safety Management Code will invalidate the assumption in the Navy's 1995 study that there will be cross-employment rights between competing maritime unions. Finally, other studies have shown that for various legitimate reasons, of an estimated 9000 excess mariners presumed available for surge support during the Gulf War, 55 percent did not sail on ships maintained in reduced operating status. Nothing has occurred since 1991 that would reduce this high percentage of non-deployable mariners, thus challenging, if not invalidating, the assumption in the 1995 Navy study that every available mariner would sail if called upon.

New Conventions and Codes Affect Maritime Training and Certification Requirements

There is a movement in the commercial shipping industry to improve the safety of life at sea and preserve the ocean environment. The International Maritime Organization (IMO), with 153 member nations, is leading the effort to reach

these goals. Two conventions dealing with safety have recently been ratified, and the United States has signed both. These conventions give individual nation-states improved police powers to enforce the requirements of the international conventions. Nations that decide not to abide by the conventions will be placed on a blacklist maintained by the IMO, and their ships can be declared unseaworthy or denied entry at foreign seaports. The two primary conventions are those that establish 1995 amendments to the 1978 Standards of Training, Certification, and Watchkeeping for Seafarers (STCW), and that prescribe the International Safety Management (ISM) Code.

One possible outcome of the new conventions and codes is the severe reduction, if not outright elimination, of the pool of excess "qualified" mariners currently working shoreside that DOD is counting on to crew surge sealift ships during the next major deployment. The 1994 GAO report and the 1995 US Navy study, although aware of the potential changes, could not adequately acknowledge this situation because the new conventions had not been fully adopted at the time of their publication. Strategic planners should examine closely the combined effects of the new codes, the declining number of US mariners sailing aboard US flag vessels, and (although the reports cited above discuss the problem) the number of losses facing the US merchant fleet and the rate at which they are occurring.

Training and Manning Under the 1978 Standards of Training, Certification, and Watchkeeping for Seafarers

Training and certification of mariners throughout the world is supposed to be guided by the convention on STCW adopted in 1978, enacted in 1984, and subsequently amended in 1995. The objective of this treaty, which set qualifications for masters, officers, and watchkeeping personnel on seagoing merchant ships, was to provide a training baseline that would, if enforced, improve the quality of merchant sailors worldwide. As nations signed the convention, they agreed to upgrade, as appropriate, national maritime training standards to reflect the improvements required by the STCW convention.

The United States did not ratify the convention until 1991, and by 1996, when the required changes took effect in the United States, the original treaty had been revised. The 1978 convention proved to have serious limitations, among which were widespread abuse of vague standards and requirements, outdated technical references, insufficient port-state controls, and excessive reliance on static methods, such as written exams, for determining competency. Member states began in 1993 to re-engineer the 1978 convention; changes in technology, the findings of marine human factor studies, and the increasing use of mariners from nations without a maritime tradition all contributed to the imperative for updating the original convention.[16]

The current STCW convention reflects independent US Coast Guard studies which concluded that almost 85 percent of all maritime accidents are due to human error. The United States, as one might expect, was a strong advocate of revision and played a crucial role in the redesign process.[17] The revised convention set several broad objectives which signatory states are to achieve in improving the skill levels of their mariners: dynamic assessment of proficiency for mariners; establishment of instructor and examiner qualification standards; establishment of quality standards for courses and schools; improvement of record-keeping of training; and verification of medical fitness of mariners. At this writing, the US Coast Guard is modifying the Code of Federal Regulations to mirror the new STCW standards.

The revised standards will have a significant effect on mariners documented and licensed under the old system in the United States. The proposed change to the Code of Federal Regulations will affect not only individual training, but also training institutions, shipboard equipment, licensing procedures, manning requirements, record-keeping, testing processes, and port-state controls.[18] Furthermore, it will become increasingly difficult, without time at sea or in approved courses, for seafarers to obtain or maintain both traditional merchant marine documents and the new STCW endorsements. The domestic US fleet will not be compliant with the STCW requirements, and mariners sailing domestically will not automatically meet the requirements for an ocean-going (STCW) document or license. As a result, the stringent new skill requirements, coupled with the shrinking US flag ocean-going fleet, will tend to reduce the current pool of merchant mariners capable of sailing DOD surge sealift assets. The revised convention on STCW took effect in February 1997; all measures must be implemented by participating nations no later than 2003.[19] Historically the United States has integrated a number of retired and former military personnel with military maritime training into the US Merchant Marine. The current military maritime training courses will have to meet STCW guidelines to qualify those individuals for the STCW endorsement. Otherwise these individuals may require additional training to meet STCW guidelines before they can join the merchant marine.

The revised STCW convention places new certification and licensing requirements on merchant sailors, increases oversight requirements on companies operating international ocean-going vessels, and gives increased police powers to nation-states by allowing them to enforce STCW standards more effectively than acknowledged in the 1978 version. Any vessels sailing to foreign countries that are enforcing the standards of the International Maritime Organization must be crewed by mariners with STCW endorsements. The immediate effect in the United States of these revised standards will be to create two categories of mariners--those with the endorsements and those without. Inland and Great Lakes mariners, for example, will not be required to conform to STCW standards, and institutions that train only inland or Great Lakes mariners may elect not to adopt the new standards.

To comply with the 1996 standards, training institutions and courses leading to the new certificates must be approved by the Coast Guard before instruction can begin. Course instructors and examiners also must be certified by the Coast Guard, and the instructor and examiner cannot be the same individual. Training institutions that have only a marginal demand for mariners certified to STCW standards may elect to forgo this part of the business. The industry will therefore undergo a consolidation of approved training institutions, with the result that our ability to train large numbers of ocean-going mariners on short notice may be reduced.

Changes in Shipboard Communications Standards

A recent change in shipboard communications standards increases the training required for the merchant fleet.[20] The 1996 Telecommunications Act (PL-104-104) eliminates the requirement for US flag vessels to carry radio telegraphy equipment if the vessel is equipped with the Global Maritime Distress and Safety System (GMDSS). This new system offers a ship owner three options for using the equipment: one set of equipment with a dedicated onboard maintainer, one set of required equipment with a shore-based maintenance program, and redundant equipment aboard the ship. The Coast Guard in its rulemaking has added the requirement that all licensed US deck officers must be GMDSS operators, and it requires that all mariners trained on the system attend an approved operations training course to certify competency.

Most companies will eliminate the traditional radio officer to reduce personnel costs. Deck officers will be required to have an FCC operator's license for the Global Maritime Distress and Safety System, and be required to complete a training course approved by the Coast Guard. The US Merchant Marine Academy has offered an elective course and a licensing option for its deck-licensed midshipmen, and more recently has embedded a course on the system and a licensing requirement into its curriculum for all classes graduating after 1997. The maritime unions also have established very progressive programs to help actively sailing members obtain these licenses; these initiatives do not, however, change the fact that additional requirements have been added for all mariners currently holding licenses. This means that the reserve pool of deck officers working shore jobs, whom the Department of Defense is counting on to be available and willing to sail surge ships in reduced operating status, will have to undergo the required GMDSS training after call-up and before departure into international waters.

In addition to new requirements for institutional training, and for certification and training in GMDSS, the figures below and on the following page list the remaining requirements necessary to maintain a license under the provisions of the amended STCW. Figure 1, below, shows the old and new requirements for a deck officer on a roll-on/roll-off vessel which also transfers petroleum products. The Military Sealift Command's *Corporal Hauge* and *Bob Hope* fit this description. Perhaps more telling than a list of requirements is the fact that the new endorsements will require approximately seven weeks of course work in addition to practical experience. Course fees, per diem, and loss of wages could easily exceed \$20,000 per mariner.

| Deck Officer Requirements | |
|----------------------------------|---------------------------|
| 1996 | 2003* |
| 1. US Coast Guard License | 1. US Coast Guard License |
| 2. Radar Endorsement | 2. Radar Endorsement |
| | 3. STCW Endorsement |

| | |
|--|--|
| | 4. FCC GMDSS License |
| | 5. GMDSS Operator's Course Endorsement |
| | 6. ARPA Endorsement |
| | 7. Roll-On/Roll-Off Endorsement |
| | 8. Advanced Firefighting Certificate |
| | 9. Bridge Teamwork Course Endorsement |
| | 10. Personal Survival Course Endorsement |
| | 11. Personal Safety and Social Responsibility Course Endorsement |
| * All officers seeking renewal of their licenses must produce proof of either recency of sailing or attendance at refresher courses within the five-year renewal period. | |

Figure 1. Deck Officer Requirements

Add to this situation the fact that training generally is not offered to personnel who are not actively sailing. One has to wonder if a mariner currently not sailing and faced with dismal commercial ocean-going opportunities will pay the out-of-pocket costs to obtain and maintain proficiency in all, or any, of the new certification requirements. It is reasonable to assume that commercial carriers will train only the minimum number of personnel required to adequately crew their own operational fleets. A significant number of individuals may therefore allow their licenses to lapse, further reducing the pool of available and qualified mariners for surge shipping requirements that figured in the assumptions used in the 1994 and 1995 studies.

To serve as a properly certified deck officer in 2003 aboard an MSC *Bob Hope* class vessel that is in compliance with the STCW convention, individuals must have all the certificates and endorsements listed in Figure 1. Engineering officers would need all of the endorsements in Figure 2, below. Unlicensed personnel would require all of the engineering endorsements except the license. Crew members with all of these credentials, especially senior experienced individuals, seem destined to be scarce in the near future. Additionally, when breaking out vessels in reduced operating status during an emergency, officers and unlicensed personnel may not be interchangeable unless a concerted effort is made to cross-train between ship types. This will make annual and sick leave more difficult to manage in peacetime as well as during emergency operations.

| Engineering Officer Requirements | |
|--|---|
| 1996 | 2003* |
| 1. US Coast Guard License | 1. US Coast Guard License |
| | 2. STCW Endorsement |
| | 3. Roll-On/Roll-Off Endorsement |
| | 4. Advanced Firefighting Certificate |
| | 5. Personal Survival Course Endorsement |
| | 6. Personal Safety and Social Responsibility Course Endorsement |
| * All officers and unlicensed mariners seeking renewal of their licenses must produce proof of either recency of sailing or attendance at refresher courses within the five-year renewal period. | |

Figure 2. Deck Officer Requirements

The International Safety Management Code

The International Safety Management Code is an amendment to the Safety of Life at Sea Convention that will go into effect for all tankers, bulkers, and passenger vessels over 500 gross tons on 1 August 1998, and for all other vessels over 500 gross tons by 2002.[21] The code will have a multidimensional effect on manning, since it requires that all company shipboard employees be in compliance with all regulations, such as the STCW discussed above. Each company will have to assess training needs unique to its vessels and assure that all mariners receive the increased training. The International Safety Management Code stipulates that each company establish strict record-keeping procedures for the company and for crew members. Each company will need to establish training programs that meet the objectives of the company's own written safety and environmental protection policy, and will have to establish a continuous improvement process and educate all of its personnel, afloat and ashore, in its use.[22]

Companies face internal and external audits to ensure compliance with this code. Once the company passes the external audits, a Document of Compliance will be issued by its flag state. Each ship in the fleet will then be audited and issued a Safety Management Certificate. The shipping company's investment in time and money to educate its shipboard personnel will work against the treatment of seamen as casual labor; it also could put an end to the traditional view of crew as interchangeable among most ships operated by a particular company. This in turn may make entry into the industry more restrictive and require recruiting of higher-quality personnel. Even if the total number of mariners in the supportable pool were not to decline because of the ISM code requirements, their interchangeability will be substantially reduced.

The US Navy's 1995 study assumed cross-employment between maritime unions; that assumption may still be valid. However, the effects of the ISM code on cross-employment between competing companies was not addressed. Companies that have paid to ensure they have mariners who meet all the requirements of their Safety Management Certificates will be reluctant to release those mariners on short notice, knowing that they will have to train new individuals to standard if they are to maintain their current operations. A company's failure to comply with the terms of the ISM code could result in denial of entry into ports and a possible claim of unseaworthiness.

In a national emergency, if a company releases sailors to crew reserve vessels, and cannot replace them with "qualified" mariners, then that company's ships may legitimately be denied access to foreign ports until it trains new crews to replace the ones that are sailing in support of the US military. Furthermore, if there is no "qualified" reserve pool of mariners and the United States crews the surge sealift ships with unqualified sailors, these ships may be denied access to foreign ports, especially those located in countries that do not support the actions of the United States, and the ships would be subject to being impounded for unseaworthiness once they enter foreign waters.

Tankerman Regulations

There is a third category of change that could affect this element of the strategic mobility triad: tankerman regulations. In 1997 new rules came into force regarding qualifications for tankermen and persons in charge (PIC) of transfers of dangerous liquids and liquefied gases.[23] The immediate effect on personnel was to make individuals who have not sailed on a tanker within the previous five years ineligible to serve as persons in charge. Consequently, the labor pool that existed in January 1997, containing several thousand deck-licensed officers and unlicensed mariners who could crew reserve tankers, declined to several hundred individuals with the entry into force of these new qualification standards.

The practical implication of the new rules is that individuals who want to sail as a person in charge of certain tanker activities now need to take an approved PIC tankerman course before renewal of their license. In addition to the course, individuals requiring a PIC certificate must have sailed within the five years prior to license renewal and must have been involved in 10 documented transfers of dangerous liquids or liquefied gases. A review of union training documents revealed that even in the two-week courses, students get credit for a maximum of only two transfers, eight short of the PIC requirement.[24] Without actual sailing time, it will be virtually impossible to meet this new requirement as presently written, regardless of who pays for the training.

Policy Issues

Some argue that in order to fill empty billets during a crisis, the Military Sealift Command may elect to claim public vessel status for its ships, thus exempting surge sealift assets from convention standards. However--and this is a significant policy issue to be examined--at this writing the Military Sealift Command does not consider a ship in the Ready Reserve Force fully operational until a complete crew has been provided and *all required regulatory certificates have been obtained*.^[25] If this requirement remains unmodified, it means that unions providing sailors for surge sealift ships will have to ensure that those sailors hold all required convention endorsements.

But even if the Military Sealift Command chooses to declare surge sealift assets to be "public vessels," a question arises: Should there be a pay differential for those mariners who have gone through the process and expense of obtaining and maintaining the endorsements while serving alongside less-qualified mariners on those vessels? Other issues that could affect current operations include:

- When employment aboard commercial ships is at best scarce, how will a pool of mariners who are qualified to crew surge sealift ships exist without external support?
- Should the Navy, Military Sealift Command, or the Maritime Administration receive additional public funds to help subsidize a qualified reserve pool of mariners?
- Should additional training expenses be factored in for new hire rates on ships chartered by the Military Sealift Command?
- As US flag vessels disappear, should graduates of maritime schools (union, state, and federal) be allowed to sail aboard foreign flag vessels in order to maintain recency requirements and obtain the required practical experience?
- How will drilling Naval Reserve officers in the Merchant Marine Individual Ready Reserve program maintain and upgrade their licenses in light of the new requirements? This question prompts these follow-on concerns:
 - Should the Navy approve active duty for training orders for these officers so they can take the required courses?
 - Should the Navy fund these officers to attend required training courses needed to maintain their licenses?
 - Should the promotion requirements for these officers be changed?

The United States is a signer of the 1996 revision of the STCW convention, and the US Coast Guard has proposed rules to bring the US Code of Federal Regulations in line with the requirements of the convention. It will become increasingly difficult for seafarers to obtain or maintain Standards of Training, Certification, and Watchkeeping endorsements, and as a result the revised convention will probably reduce the current pool of merchant mariners capable of sailing US surge sealift ships.

Whenever possible, shipping companies will take advantage of automation to reduce crew size. For instance, the Global Maritime Distress and Safety System will likely eliminate almost all of the radio operators under the US flag. Currently US companies operate cargo vessels with crews that range in size from 16 to 30 people. Constant changes in automation aboard ships will likely continue to reduce the total number of crew members on active commercial ships, further reducing the pool of actively sailing mariners. Europeans are currently operating vessels with one-person bridges and a total crew of seven. The short-term economic advantages at such crew levels are compelling, and US flag vessels will need to follow suit to remain competitive. However, this type of skeleton crewing, while raising serious safety issues, also further depletes the pool of mariners. The ships being acquired for surge sealift, either as newly built or used, require crews larger than commercial vessels, and the shortfall is expected to be made up by tapping those "qualified" mariners not actively sailing.

The Ready Reserve Force of 94 ships, the eight fast sealift ships, and the 11 new roll-on/roll-off vessels constitute 113 ships that will require approximately 3900 mariners: about 3170 crew members for the current ships in the Ready Reserve Force, approximately 320 for the fast sealift ships, and around 400 for the large new roll-on/roll-off vessels.^[26] But if the US government does not respond to the kinds of changes under way within the merchant marine, we could face a shortage of more than 2600 mariners qualified and licensed to the new standards who will be needed to crew all surge sealift assets.

This article suggests that unlike our 1990-91 experience, the United States will no longer be able to invite 65-year-old retired merchant mariners to return to sea. Even unskilled entry-level sailors will have to obtain endorsements and training not foreseen during the most recent analyses of US surge sealift capacity. The expected shakeout of certified maritime schools and instructors qualified to meet International Maritime Organization standards will impair our ability to recruit off the street and train individuals on short notice. The cost of compliance with the new regulations will force some casual mariners out of the industry unless they can find support to maintain sailing recency and to attend training. Companies will not be as willing to release members of their active crews to fill surge sealift billets because the ISM code will require them to be replaced with similarly qualified individuals before their own ships can sail.

There is a belief in some quarters that a prospective shortage of US merchant mariners can be offset by the use of foreign seamen. A detailed discussion of this issue is beyond the scope of this article, but historical analyses of World War II, the Vietnam War, and the Gulf War indicate that serious political and security problems attend this suggestion. Setting those issues aside, we still find that there is a serious flaw in the proposal to use foreign seamen. The effects of the new regulations are not unique to the US maritime industry, and the demands of the seafaring profession have deterred entry. A recent study by the International Shipping Federation forecast a worldwide shortage of merchant mariners by the year 2000 (see Figure 3, below).[27] The world's largest supplier of seafarers, the Philippines, is concerned that it may not make the IMO's "white list" of complying countries. The Philippines provide almost 20 percent of active merchant sailors worldwide, with more than 100 schools offering maritime courses. Experts feel that few Philippine schools meet the strict new IMO standards.[28] Even if the political and security issues could be settled, a serious question would remain as to the availability, to say nothing of the willingness, of foreign mariners to venture into harm's way in support of US national security interests.

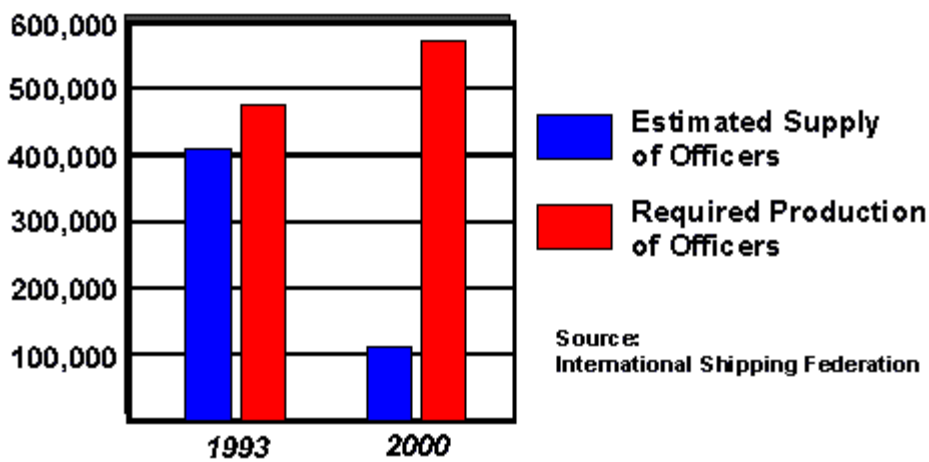


Figure 3. Worldwide Supply and Demand for Merchant Marine Officers.

Conclusion

The United States depends on its sealift assets for any significant intervention operations. The Department of Defense recognizes this and is spending billions of dollars to acquire new and used vessels for the purpose of deploying forces in accordance with the national security strategy. Starting in 1996 the Department of Defense resumed funding the maintenance and upkeep of the Ready Reserve Force. So while the square footage needed for rapid deployment is being addressed, a most vital element in the process--mariners to sail the ships in time of national emergency--also needs to be addressed in greater depth.

The shrinking US flag fleet, automation, and changing international maritime codes and conventions have created a potential shortfall of merchant seamen much more severe than might have been expected due to normal attrition. If action is not taken to counteract the many factors that could produce a crew shortage, then large numbers of vessels in the Ready Reserve Force could sit idle during the critical early stages of the next major regional conflict. Difficult questions must be answered, policy decisions reached, and funds provided to correct this situation. Finding a workable solution will require government, labor, and industry to act in unison to provide financial support to maintain a fully

qualified pool of merchant mariners.

Taking the position that we will identify reduced operating status vessels as "public ships" in order to avoid complying with international conventions is fraught with potential difficulties. There are 153 member states in the International Maritime Organization. For the United States to project our non-compliant sealift assets abroad in a crisis, we will have to persuade other seafaring nations also to forgo compliance with ratified international conventions. We should not assume that we will be able to sail through the Suez and Panama canals without complying with the new requirements. Neither should we assume that in a limited conflict all foreign countries will allow non-compliant US vessels and crews access to their ports or that laborers in those ports will work our ships. Perhaps most important, this quick fix of declaring reduced operating status ships to be "public vessels" does not solve the problem of a shortage of qualified mariners.

The maritime academies, union schools, and industry have for many years been producing world-class mariners. The men and women of the merchant marine have stepped forward to volunteer in every conflict our nation has fought. However, when the number of idle surge ships begins to reach the same size as a dwindling commercial fleet, then there is no place for these mariners to sail, and as a result the United States will lack the qualified mariners necessary to operate both fleets in time of crisis. The federal government, in concert with the shipping companies and maritime unions, should begin now to develop a national maritime policy that addresses these fundamental issues to ensure a sufficiency of qualified mariners. The United States cannot wait until servicemen and women are under fire to solve these issues.

NOTES

1. *National Military Strategy of the United States of America: A Strategy of Flexible and Selective Engagement* (Washington: GPO, 1995), p. 6.
2. As of September 1996, Maritime Administration ship managers and General Agents employed 447 mariners on 46 of the reduced operating status ships. US Department of Transportation, *MARAD '96, The Annual Report of the Maritime Administration*, May 1997, p. 2-3. Hereafter *MARAD '96*.
3. US Department of Transportation, Maritime Administration, *Maritime Industry Key Statistics*, Summer 1996.
4. *MARAD '96*, pp. 13, 14. "Cabotage" is "trade or transport in coastal waters or airspace or between two points within a country" (*Webster's Ninth New Collegiate Dictionary*).
5. "Sea-Land Gets OK to Reflag 5 Boxships," *The Journal of Commerce*, 15 February 1995, p.1; "MARAD to Allow APL to Hoist Foreign Flags," *The Journal of Commerce*, 16 November 1994, p.1; "APL Agrees To MARAD's Foreign-Flag Restrictions," *The Journal of Commerce*, 17 November 1994, p.1.
6. US Office of Management and Budget, *Budget of the United States Government, Appendix* (Washington: GPO, 1996), pp. 356, 760.
7. "Carriers Start Queuing up for Subsidies," *The Journal of Commerce*, 26 September 1996.
8. *Ibid.*
9. US Dept. of Transportation, Maritime Administration, *Maritime Industry Key Statistics* card, Summer 1996.
10. *MARAD '96*, p. 66.
11. Preston Gates Ellis and Rouvelas Meeds, *The Importance of Cabotage to U.S. Maritime Policy*, October 1997 study prepared for the Maritime Cabotage Task Force, Washington, D.C.
12. US General Accounting Office, *Ready Reserve Force: Ship Readiness Has Improved, but Other Concerns Remain*

(GAO Report GAO/NSIAD-95-24), 11 August 1994.

13. Department of the Navy, Office of the Chief of Naval Operations, prepared by McCaffery & Whitener, Inc., *Ready Reserve Force Contingency Crewing Requirements Study*, 15 December 1995, Executive Summary.

14. Ibid.

15. White House Press Release, 8 October 1996; US House of Representatives, *Maritime Security Act of 1996, H.R. 1350, Section 10*, 104th Cong., 2d sess. (Washington: GPO, 1996), accessible on-line at: <ftp://ftp.loc.gov/pub/thomas/c104/h1350.enr.txt>.

16. International Shipping Federation Ltd., *The Revised STCW Convention, A Guide for the Shipping Industry on the 1995 Amendments to the IMO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers* (London: International Shipping Federation, 1995), p. 5.

17. US Coast Guard, *Prevention Through People* (Washington: GPO, 1995).

18. 46 CFR Part 10. The rule amends the domestic rules on licensing and documentation of personnel serving on US seagoing vessels. It implements the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW), as amended in 1995. (Federal Register: 26 June 1997)

19. International Shipping Federation Ltd., *The Revised STCW Convention, A Guide . . .*, p. 9.

20. The FCC codified in 47 CFR, Part 80, certain requirements of the Global Maritime Distress and Safety System that are part of Chapter IV of the International Convention of the Safety of Life at Sea.

21. International Maritime Organizations, Resolution A.741(18), *International Management Code For the Safe Operation of Ships and For Pollution Prevention [International Safety Management Code]* (London: International Maritime Organizations, November 1993).

22. 33 CFR Part 96, 46 CFR Part 2, et al. International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management Code). This final rule is effective on 23 January 1998. (Federal Register: 24 December 1997 [vol. 62, no. 247])

23. 33 CFR Parts 154, 155, and 156, 46 CFR Parts 13, 15, 30, 35, 98, and 105, Qualifications for Tankermen and for Persons in Charge of Transfers of Dangerous Liquids and Liquefied Gases. This rule sets out qualifications for tankermen, and for persons in charge of, and assisting in, the handling, transfer, and transport of oil and certain hazardous liquid cargoes in bulk on vessels. It is necessary to protect our waterways. It will ensure that these persons are competent to perform their duties, even during emergencies; will improve the handling, transfer, and transport of these cargoes; and will reduce the risk and severity of spillage from tank vessels. (Federal Register, 8 May 1997)

24. RTM Center for Advanced Maritime Officers Training, STAR Center, "Tankerman Regulations Training Advisory," Two Week Tankerman PIC Simulator Course, course registration material, Ft. Lauderdale, Fla., and Toledo, Ohio (Winter 1996, Spring 1997).

25. US General Accounting Office, *Ready Reserve Force: Ship Readiness Has Improved . . .*, p. 10.

26. James K. Matthews and Cora J. Holt, *So Many, So Much, So Far, So Fast* (Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, and Research Center, US Transportation Command, 1995), p. 119.

27. International Shipping Federation, "Supply and Demand for Merchant Marine Officers" (London: International Shipping Federation, 1995).

28. "Stricter Seafarer Training Standards Could Threaten Filipino Business," *The Journal of Commerce*, 23 October 1996.

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Reviewed 25 February 1998. Please send comments or corrections to carl_Parameters@conus.army.mil