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An Examination of the Ability of the U.S. Merchant Marine to Perform Its Mission During Peacetime and Various Contingency Situations

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UNIVERSITY OF RHODE ISLAND

AN EXAMINATION OF THE ABILITY OF THE U.S. MERCHANT
MARINE TO PERFORM ITS MISSION DURING
PEACETIME AND VARIOUS CONTINGENCY SITUATIONS

MARINE AFFAIRS SEMINAR

GMA 652

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FOR A MASTER OF MARINE AFFAIRS DEGREE

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BY

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Chapter I

Introduction

The maritime transportation industry is an extremely important one for the United States today. Being deficient in most of the materials considered "strategic", the U.S. must import 69 of the 72 critical materials required by our high technology industry (Day, 10 August 1973). These strategic materials are mostly carried by ships; thus, our economy, and to some extent our national defense, depend on the secure and efficient operation of the maritime transportation industry. Anything which could adversely impact on the continued operation of shipping is a matter of grave concern.

The importance of the merchant marine was clearly recognized from the inception of the United States. One of the first acts passed by the new Continental Congress concerned the establishment of a merchant marine. In his report to the Congress Thomas Jefferson, in 1793, wrote of the essential nature of secure maritime transportation. This governmental interest in the merchant marine was shared by the industry itself, and U.S. flag vessels successfully competed with vessels flying other flags.

The ensuing two hundred years wreaked numerous changes to the maritime industry. The U.S. Civil War, the Indust-

rial Revolution, the change from sail to steam, and two World Wars all greatly affected the industry. As the United States progressed from an agrarian society to a highly industrial one, our dependence on imported materials grew until the present time. Viewing the figures in paragraph one, it becomes very evident that the economic well being of this nation rests, to a large extent, on the steady flow of materials into this country. These raw materials are then transformed by industry into finished products, many of which are exported. Shipping then takes these exports to the rest of the world. It has been estimated that exports account for 20 percent of domestic U.S. jobs. Therefore, shipping is a necessity for the economic health of this country.

With foreign trade being as critical as it is, it stands to reason that the U.S. would have a large, domestic-flag fleet of merchant ships capable of moving the vast tonnages required by its economy. However, due to a variety of economic circumstances, this is not the case. In fact, domestic flag vessels carry only 5 percent by weight, and 28 percent by value of our foreign trade (U.S. Dept. Commerce, August, 1981, p. 2).

While in peacetime, there are many foreign flag merchant vessels ready and able to carry what ever tonnages U.S. flag vessels cannot carry, this situation could change radically in the event of a war or national emergency.

Many foreign flag vessels are government owned or subsidized and, as such, are very dependant and responsive to the political philosophy of their governments. Even foreign vessels not directly owned or subsidized by their governments must follow the dictates of their governments, in order to avoid punitive measures in licencing, registration, etc. If these governments politically support the U.S., then trade will probably continue as usual. However, if these governments do not support the U.S., or if, due to wartime circumstances, there is an added risk to the vessels themselves or to the governments involved, then there might be an interruption in the flow of resources, both into and out of the U.S. Such an interruption, depending on its scope and duration, could cause severe economic damage to the United States. Since a strong economy is essential to the national defense, such an interruption in trade would weaken this nation's defenses. If domestic flag vessels are not able to respond adequately in this situation, the U.S. could be damaged, both economically and militarily. To avoid this damage, the number of U.S. flag vessels would have to be increased to carry the tonnages not being carried by foreign flag vessels. Depending on the speed with which additional domestic flag vessels could be pressed into service, the economy could experience shortages in vital materials, and therefore damage. At the present time, U.S. flag vessels would find it extremely difficult to respond to such a

situation in a manner timely enough to prevent shortages from occurring.

Up to this point, only general transportation has been discussed. However, in addition to routine trade, the U.S. merchant fleet would be tasked with the support of the military mission.

The hypothesis of this paper is that the U.S. Merchant Marine is currently unable to perform its peacetime or wartime mission. The methodology will be to examine the missions to be performed by the Merchant Marine during the different situations ranging from peace to war, and the historical record established by the Merchant Marine in its performance of these missions.

Missions

The United States' Merchant Marine has two missions. The first mission is to conduct normal maritime trade, both in peacetime and in wartime. The second mission is to support the military effort of the United States.

At present, the domestic flag merchant fleet cannot carry more than a small fraction of U.S. trade. The reasons underlying the commercial industry's inability to carry a fair proportion of domestic trade are many and complex; so complex, in fact, that the reasons cannot be adequately discussed in just a few pages. However, a superficial examination of these problems is necessary.

The primary factor most critical to the decline of the

U.S. flag merchant fleet can be summed up in one word: cost. Due to high overhead, U.S. companies must charge a high price to carry cargo. This situation allows competitors with a lower overhead to successfully charge lower prices and still be profitable.

High overhead for domestic vessels is caused by many factors. Vessels built in the U.S. are very expensive. Steel mills are located far from the ports which receive the raw ore from abroad, and from the shipyards. Consequently, the iron ore incurs transportation costs on its way to the steel mill. U.S. steel mills are, for the most part, antiquated, labor intensive, and inefficient. This increases the cost of the steel even further. Finally, the steel is sent to a shipyard, incurring still more transportation costs.

Once the steel arrives at a shipyard, it is used in the making of ships. Shipyards are very labor intensive and have many unions. Due to the high wages and work practices demanded by the unions and agreed to by the shipyard owners, the building of ships takes longer and is more expensive in the United States than in other countries.

Therefore, ships cost more money to build in the U.S. because of the high cost of the materials and the high cost of labor. When a ship owner pays a high price for his ship, he must charge a high price for its services to recover his investment.

A second major factor in the high freight rates charged

by U.S. companies is the wages paid to crew as well as work practices (such as guaranteed work, long vacations, overtime pay, etc.). As a result, crew costs are usually higher for domestic flag vessels than their foreign flag competitors. In fact, all things being equal, crew costs alone would make the U.S. merchant marine less competitive (Coffey, March, 1983). While Operating Differential Subsidies (ODS) reduce the magnitude of this factor, with the Reagan Administration's desire to eliminate subsidies, the wage costs become more acute.

There are other factors, as well, such as the current recession, high fuel costs, etc. However, the net result of all these factors is that the U.S. flag fleet is not very competitive and is smaller than the volume of U.S. trade would indicate. Consequently, the U.S. flag fleet cannot carry the total commerce, or even half of the total commerce, of the United States.

In peacetime, the mission of the merchant marine, to conduct the U.S. commerce, is accomplished through a combination of domestic and foreign flag vessels. While it does not appear that, by itself, the domestic flag fleet could perform its mission, with the "assistance" of foreign flag vessels, the mission is accomplished.

However, in times of war or national emergency, the U.S. merchant marine would have the added responsibility of supporting the U.S. military mission in addition to its peacetime mission. This paper will analyze the present

ability of the merchant marine to effectively perform the added mission of supporting the military, while continuing to carry the U.S. commerce.

It is appropriate here to define some of the above terms, such as Military Sealift Command Nucleus Fleet, Ready Reserve Fleet, and National Defense Reserve Fleet.

The Military Sealift Command (MSC) is a part of the Navy and is tasked with the responsibility of moving all waterborne military cargo. It has a four part mission:

1. MSC provides sealift capability for deployment and support of U.S. forces and material in an emergency;
2. MSC develops plans for expansion of sealift capabilities during an emergency or in wartime;
3. MSC provides peacetime logistical support by world-wide sealift of supplies, equipment, and material;
4. MSC provides, mans, and operates ships used for non-transportation purposes such as oceanographic and hydrographic research (Evers, 1978, p. 2).

The Military Sealift Command is composed of a nucleus fleet, owned by the government and crewed by U.S. civil servants. As such, it is totally under MSC control. Also utilized by MSC are chartered civilian ships. Some of these vessels are "bareboat" charters. Under the terms of this type of charter, the owner of the vessel leases the vessel to MSC, who then provides a civil servant crew. In addition to bareboat charters, MSC also has "time" or "voyage" charters. These ships are leased by the owner to MSC and the crewed with employees of that company.

In 1979, the Military Sealift Command had 70 ships in

the nucleus fleet (MSC, 1979, p. 2). It has been projected that the fleet will remain at this level until at least 1984. Table 1 is a listing of the number and types of vessels in the nucleus fleet.

In the event of a non-mobilization contingency where the MSC is unable to charter merchant ships, there are two additional sources of shipping: Sealift Readiness Program (SRP), and the National Defense Reserve Fleet (NDRF) (Evers, p. 14).

The Sealift Readiness Program is one in which commercial companies who wish to carry military cargo in peacetime agree to commit half of their vessels to military control in the event of an emergency. There is a pre-determined schedule for call-up, with all vessels being made available to MSC within 60 days after notification.

Because these SRP ships are merchant vessels in active service, they require little modification, such as radio equipment, and can be made available fairly quickly and easily.

The National Defense Reserve Fleet is a collection of vessels kept in storage to be used by the MSC if necessary. From an all time high of 2277 ships following World War II, the NDRF has dwindled to 317 ships in 1981 (U.S. Dept. of Transportation, 1981, p. 48). Table 2 shows the number of ships in the NDRF from 1945 to 1981. These ships are supposed to be activated within 4 weeks of notification. The ships are located in three locations: James River,

Table 1

UNITED STATES NAVAL SHIPS

SUMMARY

<u>TYPE</u>	<u>NUMBER</u>	<u>CLASSIFICATION</u>
AF -(R3S4)	1	Refrigerated Cargo
AG -(V#3)	1	Miscellaneous
AGM -(C4SA)	2	Missile Range Instru-
AGM -(ST2E)	2	mentation
AGM -(V#3)	1	"
AGM -(V#5)	1	"
AGOR-(C1ME)	1	Oceanographic Research
AGOR-NAVY	4	"
AGS -(C4SA)	1	Surveying
AGS -NAVY	6	"
AGS -(V#3)	2	"
AK -(C3SD)	1	Dry Cargo
AK -(C4)	1	"
AK -(V#3)	5	"
AKC -(C1ME)	1	Dry Cargo (Coastal)
AKR -(C3ST)	1	"
AKR -(C4ST)	1	"
AO	16	Tanker
AO -(EXT5)	1	"
AO -(T3S2)	7	"
AO -(T5)	4	"
AOG -(T1B2)	3	Gasoline Tanker
ARC -(S3S2)	2	Cable Repairing
ARC -(S4SE)	1	"
ATF -NAVY	4	Fleet Ocean Tug

(Source: Ship Register, Military Sealift Command, Washington D.C., 1979)

Table 2

NATIONAL DEFENSE RESERVE FLEET, 1945-1981

<u>Fiscal Year</u>	<u>Ships</u>	<u>Fiscal Year</u>	<u>Ships</u>
1945	5	1963	1819
1946	1421	1964	1739
1947	1204	1965	1594
1948	1675	1966	1327
1949	1934	1967	1152
1950	2277	1968	1062
1951	1767	1969	1017
1952	1853	1970	1027
1953	1932	1971	860
1954	2067	1972	673
1955	2068	1973	541
1956	2061	1974	487
1957	1889	1975	419
1958	2074	1976	348
1959	2060	1977	333
1960	2000	1978	306
1961	1923	1979	317
1962	1862	1980	320
		1981	317

(Source: MARAD Report, FY 1981)

Virginia; Beaumont, Texas; and Suisun Bay, California. In the event of an activation, some or all of these vessels would be towed to various shipyards and be put into service.

Part of the NRDF is the Ready Reserve Fleet (RRF). This is a program whereby selected ships receive a high degree of maintenance and can be re-activated within 10 days. Table 3 is the RRF Activation Schedule. This program was established in 1976 when the Maritime Administration (MARAD), prompted by changes in the Department of Defense (DOD) sealift requirements that supplemental sealift capacity be made available within 10 days, conducted an investigation which showed that NRDF ships could not be activated in less than 30-40 days. As a result of this investigation, a memorandum of agreement was reached between the Department of Commerce and the Department of the Navy in 1977. This agreement specified that the Chief of Naval Operations, with the concurrence of the Assistant Secretary of Commerce for Maritime Affairs, would determine the number of ships to be called-up, the types of ships, and when these ships would be activated (Evers, p. 42).

Since the NRDF and the RRF are the only assets always available to the MSC, they will be discussed in depth.

As stated earlier, the RRF was created when it was determined that the NRDF could not respond to contingencies quickly enough to meet new DOD requirements. In order to upgrade the response time to comply with DOD directives, the Department of the Navy and the Maritime Administration

Table 3

READY RESERVE FORCE ACTIVATION SCHEDULE

SEQ	VESSEL/LOCATION	RETENTION		PORT	READINESS DATE
		STATUS	DATE		
	James River				
1	LAKE Philadelphia	5 days		Philadelphia	M-9
2	PRIDE "	5 days		"	M-9
3	SCAN "	5 days		"	M-9
4	LONE STAR MARINER Baltimore	10 days		Norfolk, VA	M-4
5	AGENT Cheatham Annex	10 days		"	M-4
6	OHIO	10 days		"	M-4
7	PUERTO RICO	10 days		"	M-4
8	CATAWBA VICTORY	10 days		Baltimore, MD	M-2
9	YOUNG AMERICA	10 days		"	M-2
10	GREAT REPUBLIC	10 days		"	M-2
11	AMBASSADOR	10 days		Norfolk, VA	M-2
12	CAPE AVINOF	10 days		"	M-2
13	CAPE ALAVA	10 days		"	M-1
14	CAPE ARCHWAY	10 days		"	M-1
15	CAPE ALEXANDER	10 days		"	M-1
16	CAPE ANN	10 days		"	M
17	ADVENTURER	10 days		"	M
18	CRACKER STATE MARINER	10 days		"	M+1
19	AIDE	10 days		"	M+1
20	OLD DOMINION MARINER	10 days		"	M+1
21	BANNER	10 days		"	M+2
	Beaumont				
1	PIONEER CRUSADER	10 days		Beaumont, TX	M-4
2	PIONEER CONTRACTOR	10 days		"	M-4
3	SANTA ANA	10 days		Galveston, TX	M-2
4	MAINE	10 days		Beaumont, TX	M-3
5	WASHINGTON	10 days		"	M-3
6	PIONEER COMMANDER	10 days		"	M-2
	Suisun Bay				
1	CALIFORNIA Oakland	5 days		San Francisco, CA	M-9
2	LINCOLN	5 days		"	M-8
3	PRESIDENT	5 days		"	M-8

(Source: Michael Blouin)

conducted feasibility studies and decided to upgrade 30 Victory class ships. After further developments, the decision was made to develop a carrying capacity of 340,000 measurement tons, which is approximately the capacity of 30 Victory class ships. This capacity was to be realized by utilizing a mix of vessels instead of just using the Victories. Of particular importance in the making of this decision was the availability of SEATRAN vessels, which are excellent vessels in which to carry combat support equipment such as tanks, trucks, artillery, helicopters, etc, due to the ship's wide hatches and clear deck space (Evers, p. 46).

Gradually, the RRF has had vessels added to it until the present time, where it has 33 vessels, with plans to add more in the near future (Blouin, 15 April 1983).

The U.S. civilian fleet presently has about 500 vessels in its inventory. This fleet is composed of many types of vessels, only some of which are of use to the military. Some of the vessels of varying degrees of application to military service are Lift-On, Lift-Off (LOLO) container ships, Roll-on, Roll-Off (RO/RO), Barge Carrying Vessels (BCV's), consisting of both LASH, SEABEE, and break bulk. More will be said about these vessels later in this paper.

CHAPTER II

Degrees of Emergencies

There are various levels, or degrees, of national emergencies. Each degree will require a different response from the merchant marine. In 1954, the Secretary of Commerce and the Secretary of Defense published an agreement, called the Wilson-Weeks Agreement, which divides contingency operations into two categories: war or a declared national emergency; and anything else (Kelly, 1961, pp. 17, 18). This agreement establishes a priority use of shipping during a war, but it does not address situations that are not national emergencies. The ships to be used during a war, in the order listed, are as follows:

1. Military Sealift Command Nucleus Fleet
2. Civilian liner/tramp service
3. Charter of civilian ships
4. National Defense Reserve Fleet
5. Foreign flag charters

A major problem with this agreement is that a war or declared national emergency must exist before this agreement comes into effect. However, this nation's involvement in Korea, Viet Nam, and the Indian Ocean fell into the second category: not a war or declared emergency. Yet these three situations all placed demands on the merchant marine to support a military mission in addition to the

normal peacetime maritime trade.

A second method of determining degrees of crisis was established in a Memorandum between the Department of Commerce and the Military Sealift Command. This agreement delineates four situations ranging from normal peacetime trade to full mobilization and the varying degrees of involvement of the Merchant Marine (Dept. of Commerce/MSC Memorandum, 1978, p. 2).

The first situation is normal peacetime circumstances. In this case, the Military Sealift Command's nucleus fleet is to handle all military cargo. The next situation is defined as a minor emergency. An example of this might be the Iranian hostage situation in 1979-1981. To meet the increased demand for vessels necessary to carry military cargo, the MSC nucleus fleet would be augmented by the Ready Reserve Force (RRF). The third situation would be a Non-Mobilization contingency. An example of this would be the Viet Nam war. The increased need for carrying military cargo would be met by the MSC nucleus fleet, the RRF, the National Defense Reserve Force (NRDF), and civilian shipping. The final situation is defined as a full mobilization. An example of this is World War II. Under these circumstances, all U.S. flag shipping would be called upon.

Missions 2, 3, and 4 of the Military Sealift Command are accomplished in peacetime with little difficulty. Planning for contingencies, providing peacetime logistical

support, and manning special purpose vessels are all routine operations conducted by the MSC. The carriage of peacetime logistical support is accomplished by the nucleus fleet and civilian charters. This results in an excess carrying capacity. MSC justifies this with the reasoning that, during an emergency, this presently wasted space would be utilized (GAO, September, 1980, p. 9).

CHAPTER III

PROBLEMS

It appears that the MSC nucleus fleet can accomplish the peacetime missions of the MSC. In the event of an emergency, however, the civilian industry is going to be called upon to provide additional ships.

Unfortunately, only the nucleus fleet and the chartered fleet are under MSC's direct control. All other vessels are under the control of their owners or other governmental agencies, and can only be called upon when certain circumstances exist. Accordingly, the performance of these vessels depends on the willingness of the crew to obey the dictates of MSC. While this should not be a problem, it does render these vessels, albeit marginally, subject to doubts concerning their willingness to obey MSC orders.

Once the proper conditions have been met, MSC then has access to U.S. flag civilian shipping. There are some problems with this however. The U.S. flag shipping industry is presently in a depressed state due to various economic considerations. As a result, there are relatively few ships available for MSC to call upon. A second problem is that many of these vessels are technologically advanced and require sophisticated port facilities for service. A third

problem is that, with the advent of containerization, there has been a reduction in the number of break-bulk vessels, ships with a high military value due to their ability to self load and unload.

In the event of a long term contingency operation, with normal, peacetime "business as usual" prevailing throughout the rest of the world, the vessels removed from commercial usage on trade routes would be quickly replaced by foreign flag competitor. After the termination of the contingency operation, these SRP vessels would experience difficulty in re-entering the trade route. This difficulty could result in the loss of business, the laying up of vessels, and a further reduction in available shipping assets to MSC.

The RRF is an important source of quick response shipping, but, in no way does it lessen the importance of the NDRF. At best, the RRF is simply a stop-gap measure, and an indication that there are problems with the NDRF.

Periodically, the Navy and MARAD conduct tests to ensure that these RRF ships can be ready for loading within 10 days of notification. Thus far, all ships have successfully completed the test. While no attempt has yet been made to activate the entire fleet, it is probable that the majority of these vessels will be ready to go on time (Maritime Administration, 1978, p. 7).

The NDRF situation is completely different than that of the RRF. While the RRF can be activated quickly, it does

not have the carrying capacity that will be required in the event of a large contingency. Therefore, the NDRF will have to be activated, and therein lies the problem. Some of the difficulties in the activation of the NDRF that will have to be overcome are discussed below.

The National Defense Reserve Fleet can be activated only under certain circumstances. The authority to activate ships of the NDRF exists only under conditions where civilian ships are threatened with governmental requisitioning. Section 11 of the Merchant Ship Sales Act of 1946 states that:

"A vessel placed in such reserve shall in no case be used for any purpose whatsoever except that any such vessel may be used for account of any agency or department of the United States during any period in which vessels may be requisitioned under Section 902 of the Merchant Marine Act of 1936, as amended."

Section 902 of the Merchant Marine Act of 1936 states:

"Whenever the President shall proclaim that the security of the national defense makes it advisable OR during a national emergency declared by proclamation of the President, it shall be lawful for the commission to requisition..." (Emphasis added)

The result of these two laws is that the NDRF can be activated only when the threat of governmental requisitioning exists, and that requisitioning can occur only when the national security is in danger or during a declared national emergency.

The commercial maritime industry has feared the creation of a national fleet which could compete with them. This

helps to explain the limitation in the laws cited. Industry fears also spurred the Wilson-Weeks agreement, already discussed, which states that the NDRF can be activated only after all commercial assets have been utilized.

Once the proper circumstances exist for the activation of the NDRF, various administrative steps must be taken. These steps are displayed in Table 4.

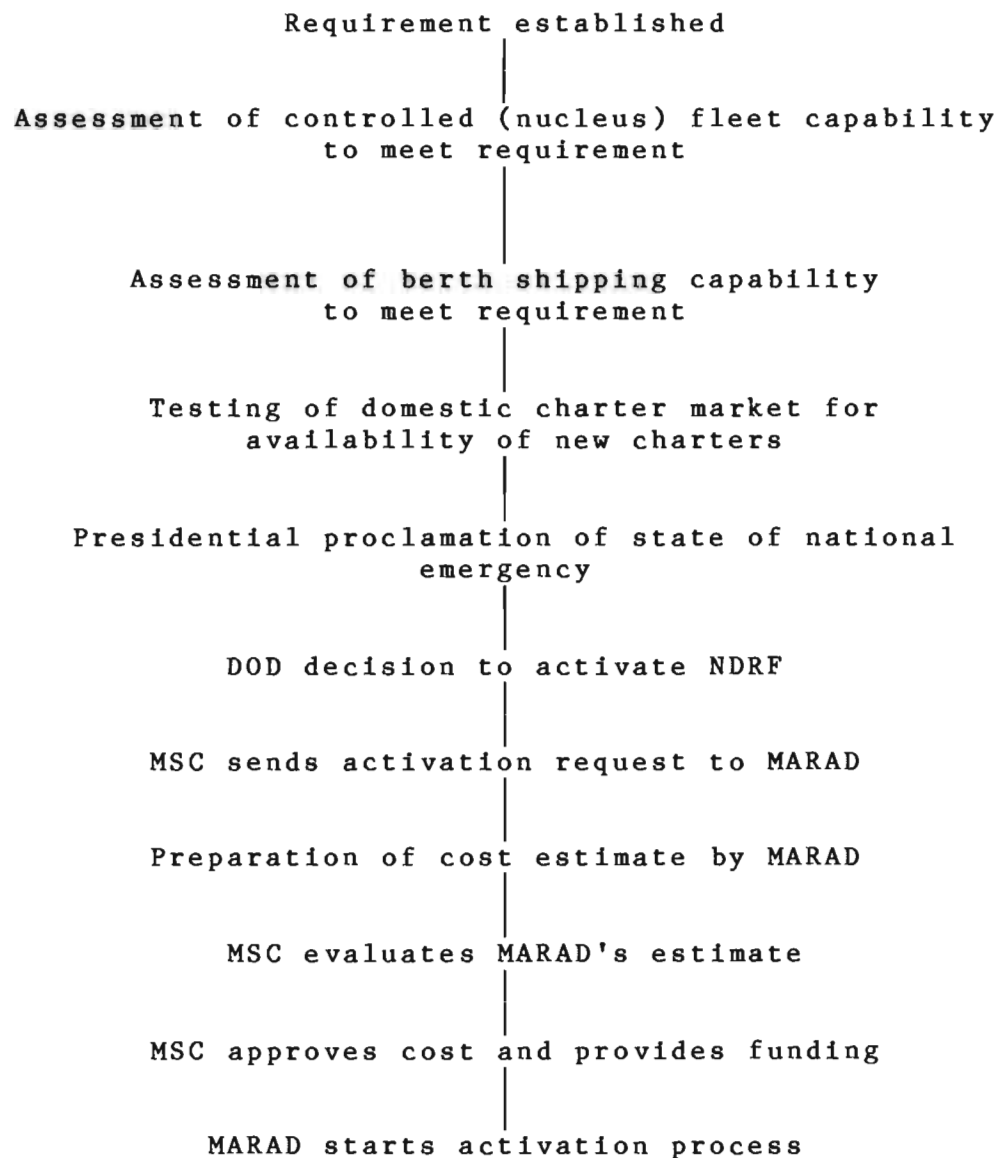
After the administrative steps have been taken, other problems arise in the activation of NDRF ships. These problems include the availability of shipyard space, hull and machinery repairs, spare parts, manpower in shipyards, manpower for crews, certifications, etc. Some of these problems are discussed below.

A brief history of the NDRF is important because it allows patterns to emerge. During the "police action" in Korea, ships of the NDRF were activated to support the military mission. Since most of these vessels had seen little service in World War II before their transfer to the reserve fleet, and since activation occurred within six or seven years, the material condition of these vessels was fairly good. On the average, these vessels were ready for service within five to seven days (Maritime Administration, p.7).

While the vessels were available within a short period of time, crewing the vessels proved to be a major problem. The activation of NDRF ships greatly increased the number of sea-going billets. These billets proved to be very

TABLE 4

ADMINISTRATIVE STEPS REQUIRED FOR THE
ACTIVATION OF THE NDRF



(Source: Evers, p.35)

difficult to fill due to the high wages being paid for ashore jobs. As a result, many ships which were materially ready for sailing were delayed due to manpower shortages. Filling the entry level positions was not that difficult, but there were acute problems finding experienced, licensed engineers, radio operators, and able-bodied seamen (MARAD, p. 7).

In summary, vessel activation was accomplished in a timely manner due to the young age of these ships and the lack of deterioration. However, it was difficult to provide manpower for crews.

Upon the completion of the Korean War and the termination of the requirements to have this extra shipping capacity, many vessels were again transferred to the NDRF. While in the reserve, these vessels were preserved by a method called contact preservation. This method of preservation basically consists of covering the ship, both inside and outside, with layers of various preservation materials. This method of preservation is not very effective and, combined with a general lack of maintenance caused by a lack of funding, the material condition of the ships deteriorated steadily (Evers, p. 68)

When, during the Viet Nam conflict, there was an increased demand for carrying capacity, vessels of the NDRF were again activated. However, during this activation process, many problem areas arose, such as increased

activation time, increased costs, shortages of repair yard capability and crew shortages.

The first 14 vessels were ready for service in 21 days (MARAD, p. 42). This was accomplished by around-the-clock shipyard work and shortcuts being taken. Sea trials were also eliminated. However, the next 37 vessels took an average of 42 days to activate, much longer than anticipated. This delay was caused by the deteriorated condition of the ships, and the corresponding need for greater, and longer, repair work. Another cause for the delay was the inability of the shipyards to assign a priority to the NDRF, due to the business as usual attitude prevailing in the industry (MARAD, p. 8).

As the shipyards were working 24 hours a day, costs rose dramatically. In an effort to cut costs, DOD requested that additional ships be activated on a "least cost" basis. Accordingly, the shipyards eliminated the 24 hour shifts. This resulted in more delays. The average time for the activation of the second half of 101 ships was 2 months (MARAD, p. 42).

After activation, a number of ships experienced mechanical failures serious enough to warrant additional shipyard time. Eventually, the majority of ships were adequate for the tasks assigned.

As in the Korean conflict, difficulties were experienced in providing the manpower necessary to crew the ships. The sudden increase in the number of sea going billets far

exceeded the available manpower. Critical shortages occurred in the billets requiring experienced mariners, and some vessels had to sail shorthanded, or delay sailing altogether. From 1966 to 1968, approximately 42 percent of the vessels sailing to Viet Nam had to delay their departure (MARAD, p. 42).

The present manning situation is not very different than that experienced during the Viet Nam war. It has been estimated that, if activated, the NDRF would require over 11,600 additional billets (Dept. of Commerce/MSC Memorandum, 1978, p. 2). It would be extremely difficult to find the manpower that these billets require.

However, all is not hopeless. There are approximately 4,000 civil servant mariners not assigned to MSC. These mariners work for NOAA, Department of the Interior, and the Army Corps of Engineers. In an emergency, and with the concurrence of the various departments, these mariners could be transferred to the MSC. In addition, there are numerous peripheral vessels which may be viewed as a source of manpower. These vessels include oil exploration ships, ferries, barges, tugs, and research vessels (DOT/MSC Memo, p. 2).

Unfortunately, the MSC must rely on the patriotism of these mariners to volunteer for service. There is presently no authority to draft civilians and make them work on ships during an emergency situation (DOT/MSC Memo, p. 2).

While there has been a decline in sea going billets, there are other emergency sources of manpower. The U.S.

Merchant Marine Academy and the five state maritime academies can provide officers. Emergency legislation could allow retired mariners to be recalled to active service. Reduction of vacation time and a lower turnover rate would make more mariners available. Other solutions include the utilization of peripheral vessel personnel, increased recruitment, lower standards, and easier licensing of crewmembers.

One bright spot to this otherwise dismal picture is that the crewmen on civilian vessels frequently work for three months with the next three months off as vacation time. In effect, then, each vessel has two complete crews, each crew working for half of the year. Since there are approximately 12,000 billets in the vessels of the civilian industry, and each billet has 2 crewmen, then by keeping one crew on a vessel for the whole year, an additional 12,000 crewmen are available for service on another ship. This alone would go a long way towards solving the manpower problem in manning NDRF ships. The real difficulty with this solution is getting the maritime unions to agree with it (Coffey, 29 March 1983). This will probably require almost a full mobilization effort.

Three different situations will be briefly examined concerning the manpower constraints: minor emergency, non-mobilization contingency, and full mobilization. A minor emergency is defined as a situation where the RRF would be activated, there would be shortages in experienced engineering and radio officers. The maritime unions would have to give priority to manning RRF ships. In a non-mobilization contingency,

almost full mobilization activity would be required to man the RRF and the NDRF. Not only would the unions have to give priority to manning NDRF ships, they would also have to cut back drastically on vacation time. Shortages would still occur. During a full mobilization, the unions would have to reduce the vacation time of their members even further. Even with this activity, many vessels would have to sail shorthanded, or delay sailing altogether.

In summary, finding the manpower to crew the ships presently available in the RRF and the NDRF would require an almost full mobilization effort. Retired mariners would be recalled, a massive recruitment would be instigated, vacation time would be curtailed, and some vessels would sail shorthanded.

Since the Viet Nam activation of the NDRF, numerous changes have occurred in the preservation of the vessels. A major problem with the previous method, the contact method, was that the layers tended to harden over time. As a result, it became very time-consuming and expensive to remove these layers when the ship was activated. These vessels are also protected by cathodic protection. Under the new method of preservation, vessels are sealed and dehumidified. This severely retards deterioration. In this method, metal plates are located in the harbor floor directly beneath the ships. An electrical current is passed through the plates and into the hulls. This serves to harden the hull and is very effective in the prevention of oxidation,

or rust.

A problem that has existed in the past and continues to plague the NDRF is the lack of funding for maintenance. As each year goes by, the age of the NDRF increases, requiring greater attention to maintenance tasks to ensure that these ships will be ready to respond quickly to an activation order. However, the budgetary allowance for maintenance is less than 1 percent of the MARAD budget (MARAD FY 1981 Report, p. 49). This level of funding is insufficient to prevent deterioration.

Ships today must comply with a variety of regulations to be allowed to operate in the U.S. Most of these regulations were issued after the ships of the NDRF were built. As a result, many, if not most, NDRF vessels cannot meet the new regulations. These new regulations include anti-pollution devices such as an oily waste tank to hold contaminated bilge water and sanitation equipment to prevent the discharge of raw sewage into the harbor. It is a fairly simple matter to modify existing facilities of these vessels to comply with these particular requirements, but some of the other regulations are not as easily satisfied. In some instances, compliance will require extensive modifications that are both expensive and time consuming (Evers, p. 73).

The U.S. Coast Guard (USCG) and the American Bureau of Shipping (ABS) both require inspections. These inspections, especially in the case of the ABS, are extensive and thorough. It is presently unlikely that the ships in the NDRF could

pass these inspections. The Coast Guard will waive many requirements, but that does not absolve the government from any claims of damage caused by vessels not meeting the published standards. The ABS inspection is primarily for the commercial industry. It insures that a shipper is not sending his cargo on a vessel that is unseaworthy. Since the shipper on NDRF vessels will be the United States Government, this inspection should not cause too great a concern.

CHAPTER IV

SHIP TYPES

Once the proper circumstances exist for the utilization of merchant shipping for military purposes, the next area to be discussed is the types of vessels available. This section analyzes the various types of merchant vessels presently in the commercial inventory and their possible uses in a military situation.

There are three general categories of vessels: dry cargo, passenger, and tanker. In addition, each category has various types of vessels included within it. The following is a discussion of the types and categories of vessels and the possible application of each in various military situations.

Under the category of dry cargo, there are breakbulk, container/self-sustaining, container/non self-sustaining, Roll-On/Roll-Off (RO/RO), Lighter Aboard Ship (LASH), Sea Barge (SEABEE), and bulk. Each will be discussed in turn.

A breakbulk vessel is one in which general cargo is stored within cargo holds on the ship. A breakbulk vessel stows quantities of various types of cargoes, with little effort made to segregate the cargo, except that separation necessary for the safety of the ship and cargo. For example, a case of food might be stowed next to a case of machinery.

The only limitation as to what dry cargo may be carried is determined by the size of the deck hatches and the hoisting capacity of the cargo cranes.

A vessel of this type is very valuable for military usage. Large deck hatches enable this vessel to carry a variety of cargo, notably tanks, trucks, artillery, and other equipment too large or heavy for a container. With its inherent crane, it needs only a pier or lighters on which to unload its cargo. This feature allows this vessel to operate in fairly primitive areas, or areas where, for a variety of reasons (combat damage), sophisticated pier facilities are not available.

The disadvantage of this type of vessel is that it takes a relatively long time to load and unload. In situations where speedy delivery of cargo is essential, this type of vessel may not be able to respond quickly enough.

In 1979, there were 136 vessels of this type flying the U.S. flag and five vessels under effective U.S. control (EUSC)* (Military Sealift Command, April 1979, p. 7) Unfortunately, with the advent of specialization, these general purpose dry cargo vessels are declining in number.

A self-sustained container ship is one in which cargo is first loaded into containers (normally 20'x8'x8' boxes). These containers are then loaded on board the ship. Self-

* Effective U.S. control means that these ships are owned by U.S. companies, but registered under foreign flags. These are sometimes referred to as "Flags of Convenience" or "Flags of Necessity"

sustained means that these vessels carry their own cranes with which to load and unload cargo.

Containerization is a fairly recent development in the commercial industry which has revolutionized the carriage of goods. The primary advantage of containers is the speed with which cargo can be loaded and unloaded aboard ships. This fast unloading capability, coupled with the vessel's ability to unload itself, make this type of vessel extremely valuable to the military. As with a breakbulk vessel, a self-sustained container ship needs only a pier on which to unload. This feature increases the areas of the world where this type of vessel can be utilized. A faster ability to unload means that this vessel has a shorter turnaround time; therefore fewer ships are necessary for replenishment.

One disadvantage of this type of vessel, for the military, is that not all military cargo can fit into containers. While the Sea Shed idea helps resolve this problem, this still means that some military cargo will have to be sent by other types of vessels.

One future difficulty is that, due to the space that cranes take up on the deck, and the capital costs, most container ships being built today do not have cranes. As the ships with cranes get older and are retired from service, an extremely important asset will be lost to the military. In 1979, there were fifteen vessels under U.S. flag and two under EUSC (Military Sealift Command, 1979, p. 8).

Non self-sustained container ships are like the vessel

described above, except they do not have cranes installed. The advantages are the same, except that this type of vessel can carry more cargo by utilizing the space for containers where other vessels utilize for cranes.

The disadvantage of this type of vessel is that it requires sophisticated equipment at the pier to load and discharge. This severely limits the areas where this vessel would be useful. Most containers are too heavy to be lifted by helicopter. The U.S. Army is developing watercraft to carry containers to the shore (Schoch, 1979, p. 20). However, until these watercraft are developed and brought to the port, this type of vessel is of limited value in most areas of the world.

Since this vessel is more economical, due to its ability to carry more cargo, there are more non self-sustaining vessels than self-sustaining. In 1979, there were 89 U.S. flag vessels and one EUSC vessel (MSC, 1979, p. 7).

The Roll-On/Roll-Off (RO/RO) vessel is one in which vehicles can be driven on and off under their own power, and they don't have to use a hoist. This vessel is an excellent ship to carry all manner of military vehicles, such as tanks, jeeps, truck, Armoured Personnel Carriers, self-propelled artillery, etc. The vehicles can be unloaded in a matter of hours. The disadvantages of this vessel are that there is wasted space on board, and the fact that

this vessel has almost no compartmentization*. Also, the decks of commercial vessels may not be strong enough to carry heavy military equipment.

The next two types of vessels are the Lighter Aboard Ship (LASH) and the Sea Barge (SEABEE). Both types of vessels are similar in that in both types cargo placed in self-contained barges (lighters), and the vessels themselves have the capability to load these containers. The LASH utilizes a crane, while the SEABEE uses an elevator.

Both vessels are very important for military uses because neither vessel requires more than the most rudimentary of port facilities, if any facilities are required at all. All that is required is a tug, or something that can ferry the lighters or barges from the ship to the shore. As a result, these vessels can be used even in the most battle damaged areas. In 1979, there were nineteen LASH/SEABEE type vessels under the U.S. flag and four under EUSC (MSC, 1979, p. 7).

The second general category is passenger vessels. These are vessels which carry passengers and some cargo. They tend to cater to the creature comforts of their passengers, and as such are not of too much use to the military. However, as the British so ably demonstrated, passenger liners can be converted into troop carriers fairly

* Compartmentization is a method of eliminating large open spaces in the ship as a damage control precaution. This makes the ship more survivable if it is damaged.

quickly and easily, and troop carriers have a high military importance. Passenger vessels can also serve as hospital ships. There are presently two passenger vessels flying the U.S. flag: Oceanic Independance and Constitution.

The final category is that of tankers. These vessels normally carry petroleum products, but there are special purpose tankers that carry a variety of liquid cargoes. Table 5 shows the inventory of U.S. controlled ships.

Tankers have an obvious military importance. Napoleon stated that an army marches on its stomach. If he were around today, he would probably say that an army drives on its gas tank. Todays military is highly mechanized, and requires vast amounts of gasoline and aviation fuel. Tankers will allow the military to move.

Table 5

INVENTORY OF U.S. CONTROLLED SHIPS

<u>TYPE</u>	<u>U.S. FLAG</u>		<u>FOREIGN FLAG</u>	
	<u>NO.</u>	<u>DWT</u> *	<u>NO.</u>	<u>DWT</u> *
Dry cargo				
breakbulk	136	1,863	5	49
Container				
self-sus.	15	233	2	5
Container				
non self-sus.	89	1,637	1	10
RO/RO	20	318	6	36
LASH/SEABEE	19	706	4	120
Passenger	0	0	9	67
Tanker				
major	227	12,838	292	42,892
Special	24	888	25	910

* DWT in 1,000 tons

(Source: SHIP REGISTER, Military Sealift Command, Department of the Navy, Washington, D.C., p.7.)

CHAPTER V

SCENARIOS

Having conducted an examination of the various shipping assets available to the Military Sealift Command in the four types of situations, it is appropriate here to analyze the response of these shipping assets in each of the various levels of emergency.

In these scenarios, it is assumed that a "business as usual" attitude prevails throughout the world with the exception of the area of emergency. This has been the case during the Korean War, the Viet Nam War and the Iranian Hostage situation.

During normal peacetime operations, the purpose of the civilian fleet, to conduct the maritime trade of the United States, is handled through a combination of domestic and foreign flag vessels. While the domestic flag fleet is unable to carry more than a small fraction of this nation's trade, foreign flag competitors carry the remaining portion of the trade. The net result is that international trade is conducted satisfactorily. It is probably unwise to be so dependant on foreign flag vessels for U.S. commerce; however, the peacetime mission is accomplished.

The Military Sealift Command sends cargo on the Nucleus Fleet and on chartered civilian vessels. This excess

capacity results in the wasting of government money, but it does allow for quick response to situations.

The planning mission of MSC concerning the expansion of sealift capabilities during an emergency is being carried out. A Sealift Readiness Branch has been formed in MSC to manage the acquisition and operation of the ship mobilization programs (MSC, June 1981). In summary, all peacetime missions are being accomplished, although not by U.S. vessels.

If a minor emergency situation would occur, the MSC Nucleus Fleet would attempt to carry the increased cargo demanded by this situation. If this was not adequate, then the presently chartered vessels would be utilized. Then, according to the terms of the Wilson-Weeks agreement, civilian liners and charters would be sought.

If the Viet Nam experience is any indication of what can be expected in the future, and there is no reason why it should not, domestic ship owners will request that the Ready Reserve Force and the National Defense Reserve Force be activated (Blouin, 15 April 1983). During the Viet Nam war, ships of the Sealift Enhancement Program were utilized. However, once these vessels were removed from liner service, they experienced major difficulties in re-entering the trade routes upon completion of their SEP service. As a result, the shipowners were faced with a long-term revenue loss. Accordingly, they requested the activation of the NDRF. It is reasonable to assume that, under similar

circumstances, ship owners will again request that NDRF ships be used.

Under this assumption, the RRF ships will probably be activated. Most, if not all, activated vessels should be ready to load within the ten day time frame. While the ships themselves will be ready, it is likely that shortages will occur in selected billets, at least during the early stages of the emergency. The maritime unions would have to assign a priority to the manning of these ships to avoid delays in sailing. Even so, some ships will sail short-handed. In spite of these spot shortages, the RRF ships will sail.

In summary, the merchant fleet owners will probably request that the NDRF be activated. Again, the mission will be accomplished, but primarily through the RRF, not the civilian fleet.

In a non-mobilization contingency, the nucleus fleet, civilian charters, SEP vessels, and RRF ships would prove to be insufficient to meet the increased demand for carrying capacity. The NDRF would have to be activated. For the same reasons as stated above, the SEP vessels would not be available to the MSC for long. After the RRF is activated, then the rest of the NDRF would be called-up. These vessels will be ready for loading within 60 to 90 days of notification.

The final scenario is that of full mobilization. In this case, all U.S. flag shipping and shipping under effective U.S. control would become available to the MSC. In addition,

it is highly likely that our allies will mobilize their shipping as well. However, assuming that the U.S. is alone in perceiving the emergency, then the domestic flag fleet would be hard pressed to carry out both functions: maritime trade and military support. Most planning concerning full mobilization concentrates on a war involving NATO countries. If the cause of U.S. mobilization were centered away from Europe, in the Arab oil fields, for example, would the NATO nations support the United States if the NATO nations were not directly affected? Because there is legitimate doubt about NATO's support in certain situations, only U.S. controlled assets can be depended upon.

CHAPTER VI

CONCLUSIONS

This paper has examined the assets of the civilian merchant marine and its ability to support operations in four different levels of emergency.

It is apparent that the civilian fleet cannot perform whatever missions are assigned to it. During peacetime, 95 percent by weight of imports and exports are carried by vessels registered in other nations. In the unlikely event that foreign flag vessels refuse to carry domestic commerce, the U.S. industry could not carry the tonnages required to maintain this economy.

In the other levels of emergency, it is always the RRF and the NDRF that is called upon to carry whatever excess tonnages are necessary in the situation. The potential utilization of the Sealift Readiness Program vessels has caused howls of protest from shipowners. It is only in a full mobilization that domestic shipping assets are made available to the MSC, and, even then, these assets are insufficient to adequately carry out the two assigned missions. When U.S. assets presently carry less than 5 percent by weight of domestic cargo, it is ludicrous to expect these assets to carry the other 95 percent.

While it is highly unlikely that foreign flag vessels

will stop calling at U.S. ports and that our NATO allies will forsake us, there have been instances where the United States has stood alone and risked the enmity of the rest of the world. A recent example of this is the refusal of the United States to sign the Law of the Sea Treaty. Should emotions run high during some future crisis, the dependence on foreign flag shipping may hurt the U.S. economically and militarily.

There are some possible solutions to the problem of the inability of the merchant marine to perform its missions. The easiest solution is to simply leave things as they are. The U.S. merchant marine should not be expected to do too much since it cannot. The missions of the merchant fleet should be re-assigned elsewhere. For example, the RRF and the NDRF should be assigned total responsibility for the carriage of military cargo. Since the peacetime mission of the merchant marine is being carried out by foreign flag vessels, the U.S. can simply assign the mission of carriage of trade to those vessels. To do this would acknowledge reality.

The least expensive solution to the U.S. is the adoption of the UNCTAD treaty. If the treaty is adopted, this would be a tremendous boost to the maritime industry. The cargo reservations provisions within the treaty guarantee U.S. vessels up to 40 percent of international trade. This would allow for a greater number of vessels, built by the shipowners, and provide for better assets for use during a

mobilization. However, given the "free market" philosophy of the Reagan Administration, adoption of this treaty is unlikely.

A final possible solution is the creation of a nationalized merchant marine. Since governmental ownership and/or subsidies appear to be the norm rather than the exception, this solution would simply cause the U.S. to be part of the majority. This solution runs contrary to the current administration's plan to eliminate subsidies, which is evidenced by the non-continuation of the Construction Differential Subsidy (CDS). There are also many valid reasons against nationalization. Never-the-less, nationalization should be considered as a possible solution.

Without some solution to the present situation, the U.S. merchant marine cannot be considered to be a realistic asset to the United States, since it has failed to perform any mission, even normal peacetime trade, successfully.

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