III.

Trends and Competitive Pressures

Chapter II illustrated the breadth and importance of the U.S. marine transportation system. Today, the MTS is under extraordinary pressure from:

- *Growing levels of demand from its users;*
- *Shifting user requirements;*
- *Changing infrastructure needs and MTS competitiveness;*
- *Increasing national security needs; and*
- *Growing awareness of the environment.*

This chapter summarizes the trends and pressures facing the marine transportation system.

GROWING LEVELS OF DEMAND

Increases are anticipated in both international and domestic cargo movements. Passenger and recreational traffic are also expected to grow.

Table III-1:
U.S. Foreign Trade
Annual Compound Rates in Percent.

	1993-1997 %	1998-2002 %
Container	8.6	7-8
Dry Bulk	6.2	2-3
Tanker	2.9	2-3
Other General Cargo	(3.1)	(2-3)
TOTAL	4.6	3-4

Source: DRI/McGraw-Hill, World Sea Trade Service.

Table III-2:
World Trade Growth Compared to Fleet Growth 1998-2002.

VESSEL / TRADE	TRADE %	FLEET %
Dry Bulk	3-4	1-2
Tanker	2-3	1-2
Product	4-5	3-4
Crude	1-2	0-1
General Cargo	6-7	2-3
Container	8-10	8-10
TOTAL	3-4	1-2

Source: Adapted from McGraw-Hill Companies and the U.S. Department of Commerce, 1999.

Trade

World population growth will influence the scope and character of world transportation demand in the 21st century. Over the next 25 years, world population is projected to grow from its present 5.5 billion to 8.5 billion people. The increased demand for transportation will require the expansion of existing infrastructure for all modes of transportation and perhaps the deployment of new transportation alternatives. For the MTS, this translates into a significant increase in the demand to move goods and people internationally and domestically.

World trade trends have been setting the stage for further integration of the economies of individual countries into several economic blocks. In North America, Canada and the United States signed a Free Trade Agreement in January 1989, covering trade between the world's largest trading partners. The U.S., Canada, and Mexico signed the North American Free Trade Agreement, which became effective January 1994. In Europe, a single economic market was established in accordance with previous agreements in January 1993. Finally, the Asia-Pacific Economic Cooperation (APEC) group of countries adopted the Bogor Declaration in November 1994. This statement of common resolve by APEC economic leaders was aimed at achieving free and open trade and investments by 2020 (2010 for industrialized economies).

International Cargo Movements

Trade: World trade increased by 3.8 percent annually (on a tonnage basis) between 1993 and 1997 to a total of 5.3 billion metric tons. In that same period, U.S. foreign waterborne trade grew by 4.6 percent per year to 1,071 million metric tons, and accounted for about 20 percent of global waterborne trade (see Table III-1). By 2020, U.S. foreign maritime trade is expected to more than double over 1996 tonnage levels, with total tons projected to grow 3.5 percent annually.

One of the fastest growing areas in U.S. exports is in high-value agricultural products (e.g., chilled, refrigerated, and processed foods), which has increased substantially and makes up a greater proportion of total U.S. agricultural exports that have more than doubled to over $50 billion. In 1975, the value of high-value exports was 27 percent of total U.S. agricultural exports. By 1998, they made up 63 percent of total U.S. agricultural exports. Going into the new millennium, agricultural exports are expected to increase about 45 percent to $72.6 billion – 36 percent bulk and 64 percent high value by 2008.

Table III-3: *U.S. Inland Waterway Projections by Commodity Groups (in millions of short tons).*

COMMODITY GROUP	WEIGHTED ANNUAL AVERAGE 95-98	2005	2010	2020	ANNUAL AVERAGE 1995-8 TO 2020
Farm Products	87.9	103.0	110.2	124.2	1.6%
Metals	30.9	34.6	38.2	44.7	1.7%
Coal	175.2	183.3	194.2	222.2	1.1%
Crude Petroleum	43.4	46.3	48.7	53.8	1.0%
Nonmetallic Minerals	99.9	116.8	125.6	139.9	1.5%
Forest Products	17.9	18.5	19.7	21.9	0.9%
Industrial Chemicals	41.7	46.3	52.3	65.0	2.0%
Agricultural Chemicals	12.2	13.2	13.7	14.9	0.9%
Petroleum Products	111.5	119.0	125.1	138.2	1.0%
Other	11.2	10.4	10.6	11.1	-0.1%
Total	631.8	691.4	738.3	836.0	1.3%

Sources: U.S. Army Corps of Engineers, Waterborne Commerce of the United States (for historic traffic) and the Institute for Water Resources (for projected traffic).

Vessel Types: In the near term, the number of containerships is expected to continue to grow at a significantly higher rate (8 to 10 percent) than other vessel types (see Table III-2(page 26)). The growth increases as larger containerships are introduced into mainstream east-west trades, and as containerships continue to replace traditional breakbulk ships in world liner trades. Approximately 40 percent of the new capacity on order is containerships in the 4,500 TEU+ mega-ship category. Mega-containerships were first launched in 1996 and are a growing sector of the containership fleet.

Tanker fleet growth is expected to remain limited (around 2 percent) in the near term. With the expansion of global refinery capacity in crude oil-producing areas (Middle East and Asia), it is expected that the product tanker fleet will grow more rapidly than the crude oil tanker fleet, and that the average size of product tankers will grow in response to long-haul shipping requirements.

Over the next 5 years, near-term growth for the dry bulk segment of the fleet (around 2 percent) will be limited by the recent surge in dry bulk fleet capacity (DWT) and limited growth in world primary products trades.[15]

Domestic Movements

Total inland waterways traffic is forecast to increase 1.3 percent annually, to more than 836 million tons by 2020. The impact on inland waterways infrastructure could be significant as an undersized and aging system attempts to accommodate total traffic to 738 million tons by 2010 and 836 million tons by 2020. This impact would be expected to occur more acutely on some waterways than on others.

Growth rates among major commodity groups are forecast to vary, generally between 0.9 and 2 percent (see Table III-3). Farm product traffic is expected to rebound to a growth rate of 1.6 percent. With exports comprising more than 90 percent of farm product movements on the inland waterways, total farm products traffic is projected to grow from about 88 million tons at present to about 124 million tons by 2020.[16]

Passenger Movements

Cruise Traffic: The number of cruise passengers increased at an average annual rate of 7.8 percent per year from 1995 to 1997, and is expected to continue to grow annually at 7.5 percent over the next 5 years. Increases are also expected in other cruise areas such as local harbor excursions, gambling, and dinner vessels.

The popularity of cruises has led to a record number of new vessel orders. Further, cruise operators are building increasingly larger vessels capable of carrying thousands of passengers. Even with the considerable number of vessels recently added to cruise fleets, the estimated occupancy rate for 1998 was more than 90 percent.

Ferry Traffic: Using ferries to commute to and from work is increasingly popular in the United States. Annually, Americans take an estimated 134 million ferry trips. New ferry programs have been initiated, or are being planned, in almost every coastal U.S. State as well as on international routes to Canada and Mexico. New high-speed technology has been a principal reason for the activity. The U.S. is currently the nation with the most fast ferry shipbuilding under way, with an estimated 14 such vessels under construction.

Recreational Use

The number of persons participating in recreational boating increased at an average annual rate of 1 percent per year from 1987 to 1997. Growth in the number of participants is expected to decline slightly and level off over the next 5 years as competition with other recreational activity increases. The number of recreational boats owned increased by 1.2 percent per year from 1987 to 1997. This rate of growth is expected to continue. The explosive growth in personal watercraft has changed the mix of the boating population, especially with the advent of high-speed watercraft. Canoeing and kayaking, including coastal kayaking, are growing in popularity as well.

SHIFTING USER REQUIREMENTS

Competitive pressures are affecting all users of the U.S. MTS. In some cases, it is competition among the different user groups who must share space in the MTS. In other cases, it is changes in the transportation requirements and practices of businesses that are driving changes throughout the freight movement industry. The profound changes occurring in freight movement, in particular, have significant ramifications for the U.S. marine transportation system.

Changes in Business Practices

American companies have been modernizing their manufacturing and distribution systems, as well as downsizing and restructuring their operations. As part of this efficiency drive, manufacturing industries in the U.S. also increasingly rely on multinational production. In the new global economy, American manufacturers need to be able to move raw materials, partially assembled products, and finished products efficiently and reliably, year-round, throughout the world. Retail operations similarly source and sell globally.

This decentralization of production operations has increased the total number of freight movements that must be undertaken, both domestically and internationally. Logistics, distribution, and transportation systems, therefore, become increasingly important. To compete for U.S. business, ports and other MTS components strive to make themselves efficient and effective.

The Nation's business community naturally seeks out those in the MTS that can provide cost-effective and reliable transportation. Under the emerging production, retail, and transportation systems, the delivery of nearly all goods is on a *time-definite* basis; that is, the receivers of products — either manufacturers or retail operations — require that shipments arrive on a certain date and even by a specified time. This time-definite approach, a refinement of JIT inventory management that began in the 1980s, extends across the full range of commodities, from low-value bulk items to high value consumer goods. JIT practices also evolved from the desire by businesses to reduce their costs of maintaining inventory. In the case of JIT, transportation replaced inventory. Today, inventories have been reduced further by substituting information for the physical possession of goods; that is, companies use advanced telecommunications and information systems to track where their goods are and make changes in routing, if necessary. With this tracking capability, sometimes referred to as in-transit visibility and flexibility, less physical inventory is needed. However, this approach requires shippers and transportation providers to become more sophisticated in their communications and information systems and ensure the highest possible level of system and modal reliability.

Changes in Freight Transportation Requirements

Businesses now seek five qualities in their freight transportation service:[17]

- Reliability,
- Transit time,
- Efficiency,
- Low cost, and
- Damage minimization.

Further, freight transportation is no longer viewed as a series of separate negotiations and arrangements with different types of freight providers such as trucking firms, railroads, and steamships. Instead, freight transportation is viewed and purchased in terms of the total trip from origin to destination, regardless of the number and type of transportation methods involved. Therefore, the U.S. marine transportation system extends beyond the waterfront, using trucks, railroads, and pipelines to receive and ship products.

Reliability is defined as ensuring that goods are delivered on the specified date at the specified time, in the specified amount in the specified condition, at the specified cost in a consistent manner. Reliability, in terms of on-time performance, is often part of the contract negotiated between a transportation provider and the shipper. Exacting requirements are now far more common, with on-time performance goals often being close to 100 percent. Reliability is applied to the entire trip from origin to destination, meaning that each element of the freight movement must strive for a higher degree of consistency of service. For the MTS, this means ensuring that vessels are able to enter and depart ports as scheduled; that terminals are as efficient as possible in processing shipments; and that inland connections are not hampered by congestion or other delays.

Transit time is also a consideration. However, today, transit time is often balanced against cost. As long as customers can be assured that their goods will arrive on a specified date (and time) and sufficient advance notice exists, goods can move by less expensive, slower modes. This trend has increased interest in the waterborne movement of freight. However, similar to the other factors, transit time is considered across the entire trip from origin to destination. Accordingly, there is

increased pressure to facilitate and expedite the transfer of shipments between freight conveyances (for example, from vessels to railroads or trucks).

Efficiency is defined as optimizing the use of transportation equipment so as to minimize costs. The development of the mega-ships was largely an efficiency measure to significantly reduce the cost per container. As another example, the current Asian economic situation has severely affected the balance of trade and negatively affected the efficiency of container operations. Significant increases in imports from Asia have strained containership capacity, while U.S. exports to Asia have significantly decreased to about 50 to 60 percent of capacity. Redeployment of empty containers to Asia has depressed shipping rates by 30 percent, contributing to the low profitability of liner companies.

Cost has often been the primary consideration in the handling of freight. As previously noted, businesses desire to reduce their costs of maintaining inventory. Cost is defined as obtaining the lowest possible cost for moving goods according to specified requirements (which generally consider transit time, efficiency, reliability, and damage minimization). Shippers look at the overall cost from origin to destination. As competition continues to intensify domestically and globally, companies are increasing their efforts to reduce transportation costs. In turn, transportation providers seek to improve the efficiency of their operations and reduce their costs. As transportation providers seek efficiencies and cost savings, they seek out those components of the transportation systems that have made themselves efficient.

Damage minimization has always been a consideration in goods movement. However, it is of more critical concern today. Damaged shipments are less tolerable in a business that maintains only a minimal level of inventory — the effect of an unusable shipment can reverberate through entire production lines and retail operations. In addition, increased environmental responsibilities have led corporations to a greater awareness of materials handling. The safety of workers who handle and manage the movement of goods is also part of damage minimization.

Changes in the Intermodal Transportation Industry

The increasingly stringent requirements placed on transportation providers are also reshaping the transportation industry. These changes are particularly apparent in the users of the MTS. Competition among transportation providers has intensified. Simultaneously, the freight transportation industry has undergone an unprecedented number of mergers and alliances.

Alliances and mergers are being used to increase service offerings and reduce costs. Examples of recent mergers involving MTS users and participants include Neptune Orient Line's purchase of American Presidents Lines and the restructuring of Conrail by CSX and Norfolk Southern. Alliances may occur within a single freight mode (for example, trucking, railroads, and steamship lines) or involve transportation providers from several modes. Alliances across freight modes may develop from the need to offer a total transportation package from origin to destination. An example of a single-mode alliance is the vessel sharing agreements among steamship lines. Five major alliances currently exist. Steamship lines within each alliance share container slots on their vessels. This practice enables vessels to travel at closer to maximum carrying capacity (thereby reducing the cost per container), allows steamship lines to deploy their vessels more efficiently, and increases the frequency of service that lines can offer their customers (because they have more slots available on more ships). As steamship lines rationalize, the result is a likely increase of traffic at hub ports. The concentration of cargo at hubs requires that investments be linked to volumes of traffic.

In addition to business and industry restructuring, transportation providers are continuing to innovate and rapidly deploy new technologies and equipment. The overall objectives of this research

and development are to increase customer service and reduce costs. Past examples of such innovations include the development of the double-stack train concept and the rapid acceptance of containerization in the maritime industry. A current example, with ramifications for the MTS, involves shifting traditional breakbulk commodities such as coffee, cocoa, and bananas to containers. This shift may reduce the need for breakbulk facilities while increasing the need for container terminals.

CHANGING INFRASTRUCTURE NEEDS AND MTS COMPETITIVENESS

These changing levels and types of demand place additional pressure on the marine transportation system. Competitiveness is defined as ensuring that the marine transportation system can meet the requirements of its users. The trends affecting the competitiveness of the MTS and the infrastructure that must be in the system include:

- Advances in MTS technologies;
- Competing water uses;
- Increasing dredging requirements;
- Increasing demands on locks and dams;
- Competing land uses; and
- Enhancing intermodal connections.

Advances in MTS Technologies

Advances are occurring in information technologies and navigation systems.

Information technologies: Information technology is transforming the intermodal freight industry by enabling it to integrate operations across the supply chain. The first wave of change, which is well under way, has been a shift from paper-based systems to electronic systems for transaction management and information exchange. The driving technologies have been low-cost computers; bar codes and readers; automated equipment identification (AEI) tags; sophisticated database management software; and electronic data interchange standards. The industry has adopted these technologies to meet basic customer demands for timely information and transactions. With the introduction of more accessible and affordable electronic commerce services over the Internet, all parties to the intermodal system — not just the largest corporations — will be expected to exchange information and conduct business electronically.

The second wave of change, just now under way, is the integration of real-time operations. The driving technologies include satellite location and communication systems. For example, low earth orbit satellites make it possible to track containers, and perhaps packages, either directly or by way of the truck, ship, or train carrying them. Additional technologies employ smart cards, global communications networks, and expert systems software.

These technologies are making possible the exchange of real-time performance and asset utilization information among shippers, carriers, and receivers. This information will feed manufacturing, distribution, and sales operations models and optimization tools. The systems are used to optimize the end-to-end visibility, security, and control of goods through a logistics system. They focus on the total freight trip and serve shippers' and receivers' needs. What will emerge is an integrated supply chain management system that is highly dependent upon cost-effective and reliable intermodal freight service.

Navigational Systems: Technological developments such as the Global Positioning System (GPS) and DGPS provide a level of accurate and reliable navigation services to mariners that is substantially greater than was previously available. As a byproduct of the development of electronics and computing technology, electronic navigation is becoming cheaper, more accurate, and more reliable. The power of the real-time precise positioning service offered by DGPS is only fully realized when used in conjunction with electronic charts. However, a prudent mariner does not rely on any single aid to navigation, but instead uses all available means to determine a position in the waterway and compares it to positions obtained from other forms of navigation.

Only DGPS provides the level of positioning accuracy required for electronic chart navigation. Electronic chart navigation relies on DGPS and GPS for its positioning input. Recent concerns have been expressed about the ability to jam GPS signals, the loss of signals caused by satellites becoming inoperable, shipboard positioning system breakdowns, and regions of GPS signal loss because of local electronic interference or blockage from structures or terrain. As with all Federally provided radionavigation systems, operation of the Maritime DGPS Service in time of national emergency is also subject to the direction of the National Command Authority. As such, traditional short-range aids are the backup navigation system for DGPS/GPS electronic chart users.

With continued progress in the development of advanced navigation technologies, the potential exists for the elimination of some visual short-range aids to navigation. The near-term future of maritime aids to navigation consists of a combination of visual and electronic aids, including electronic charting and GPS and enhancements. Although the reliability and accuracy of electronic aids to navigation continue to improve, the present and near-term reality is that visual aids remain an important navigation safety tool for the majority of the diverse waterway user groups. There is currently a large user base (recreational, small commercial, and fishing vessels) that continues to rely almost exclusively on the visual aids to navigation system. Even large commercial users, including harbor pilots, use the visual aids to navigation system in concert with electronic navigation tools to operate safely and efficiently. As electronic navigation tools mature and become less expensive, their use is expected to become more widespread. The USCG's goal is to leverage new technologies to establish the most cost-effective system of aids to navigation without sacrificing the safety, mobility, and environmental quality of our waterways. The USCG will encourage users to adopt proven new technologies as it works with the International Maritime Organization (IMO) to establish carriage requirements for more modern systems.

Other marine navigational services and tools reveal remarkable trends that will promote the safety and competitiveness of the MTS. These fall in the areas of nautical charts, tide, current, and water level information, hydrographic and shoreline surveying, and positioning.

Nautical charts of U.S. waters will soon benefit from continual maintenance, whereby the entire chart suite is updated on a weekly basis. These charts will initially focus on items critical to safe navigation, but in another year will include all chart information. Using new print technology, charts would no longer be printed at infrequent intervals. Instead, mariners could contact a chart retailer for a chart printed directly from NOAA's continually updated chart database.

Tide, current, water level, and meteorological information available via PORTS have already been credited with preventing groundings, reducing shipping delays, maximizing vessel capacities, and significantly improving spill response efforts. Maritime organizations and the USCG have expressed interest in expanding implementation of NOAA's PORTS. That effort is under way. PORTS data formats will comply with international standards so as to be usable on all shipboard Electronic Nautical Chart systems, from expensive to inexpensive systems.

Hydrographic and shoreline surveying technologies and strategies offer promise as well. Precise hydrographic surveying will use side-scan and multibeam sonar technologies. Shoreline surveying

will use more satellite-based imaging and other remote sensing technologies to overcome limitations of remote locations, severe weather and cloud cover. Both take advantage of advanced GPS strategies to increase survey speed and efficiency.

Trends such as larger ships and efforts to minimize vessel underkeel clearance will be significant factors in determining new mixes of aids to navigation.

Competing Water Uses

As noted earlier, growth in commercial and recreational waterway use is expected to continue. Vessel types are also changing with larger freight ships, higher speed ferries, and small, high-speed personal watercraft. The increased use, coupled with vessel speed and size, will place additional demands on already congested waterways and will add stress to the safety and mobility mechanisms used to manage the MTS today. Failure to address the increased risk factors on our Nation's waterways both increases the probability of incidents and ensures the consequences.

Increasing Dredging Requirements

The USACE is currently conducting a multiyear *National Dredging Needs Study of Ports and Harbors* to assess the needs of the national system of ports, harbors, and waterways of the United States. This study will be completed after this report is submitted to Congress. Overall, however, the Nation's future dredging requirements can be expected to grow above recent highs following the completion of current and future deepening projects and the ongoing maintenance requirements associated with these deeper channels. Some growth will also be stimulated by the increased maintenance requirements needed to meet the service demands of the maritime industry, tempered somewhat by those quantity reductions that result from regional sediment management and related efforts. The net effect would be a gradual upward trend in future annual dredging requirements, which can be expected in the long term to taper off at an elevated level.

Historical dredging data indicate a slightly downward trend in the annual quantity of dredged material for the past 10 years, with an average of 275 million cubic yards per year. However, over the next 5 years this trend can be expected to change. The current dredging program already reflects some of this growth. There is a significant amount of new dredging work under way, such as deepening of Kill Van Kull in the Port of New York/New Jersey and the Houston-Galveston Ship Channel (both projects involve deepening channels to 45 feet). A number of other significant projects await either Congressional authorization or the completion of ongoing feasibility studies. These include channel deepening at Oakland Harbor, Savannah Harbor, the lower Columbia River Ports, and the Port of New York/New Jersey. This strong demand for harbor channel deepening can be expected to stimulate a continued growth in new dredging work.

Upon completion of justified deepening work, an initial increase in maintenance dredging requirements can be expected until the hydrodynamics of the deeper channels begin to stabilize to the new dimensions. The long-term impacts of deeper channels on annual maintenance dredging is somewhat more uncertain, with dredging needs highly specific to each project location and subject to a complex set of variables involving the natural coastal and river processes that affect sediment movement.

The trend toward deeper channels, including channels 45 feet deep or greater, is also accompanied by maritime users increasing demand for channel reliability. This also creates increased conflict between channel needs and pipeline crossings. The demand is driven by the expected growth in liner trade and continued deployment of mega-ships on U.S. trade routes. The time-sensitive operating practices of these ships require the full availability of channel dimensions in order for these vessels to efficiently call at U.S. ports without service-related delays. This expectation of channel availability is

likely to increase the demand for more frequent maintenance dredging.

Such growth in dredging requirements could likely motivate the dredging industry to invest in new equipment that would expand the overall capability to undertake dredging work in the United States. This added capacity would provide the balance and flexibility needed to efficiently accommodate the combination of deepening and maintenance work expected in the future.

Although there appears to be a trend toward increased dredging needs, there is pressure to reduce the amount of material dredged because of heightened awareness and concern regarding the environmental affects of dredging and dredged material disposal. The Nation's needs for safe and efficient ports, channels, and harbors, may be achievable at the same time the quantity of material dredged is reduced. Adopting new approaches to MTS issues, such as considering dredged material as a resource and encouraging its beneficial use, should be studied.[18]

Increasing Demands on Locks and Dams

By 2000, more than 44 percent of the inland waterway locks and dams will be at least 50 years old. Many are undersized for modern commercial barge tows, which must then be broken up and reassembled at each lock. This lengthens transit times, produces queues at locks — increasing operating costs and decreasing efficiency — and causes safety and environmental concerns. These delays will become more severe as system traffic grows and as aging infrastructure requires increased maintenance and repair time. In 1998, 36 lock chambers on the system averaged delay times greater than 1 hour.[19]

Competing Land Uses

Several factors are straining land capacity at many of the Nation's ports. One notable influence on land capacity is containerization. The increased use of containers for shipping goods increased demand for extra land because containers take up more acreage portside than traditional breakbulk storage. Many ports lack the acreage needed to accommodate the growth in containerization, but some ports have successfully expanded their land capacity by purchasing and redeveloping additional waterfront property.

The availability of waterfront property to serve expanding port operations is sometimes complicated by community economic redevelopment efforts. Recent waterfront development has not addressed traditional maritime and industrial uses, but focused largely on revitalization that focuses on residential, commercial, tourist, and recreational-related uses. There is also increasing public demand for environmental enhancement projects such as creating wetlands and cleaning up contaminated media. These new land uses, while valuable and important, also increase the:

- Competition for space along the waterfront;
- Cost of land on the waterfront;
- Potential for safety hazards;
- Conflicts among land uses; and
- Environmental impacts.

As conflicts among land uses grow, environmental impacts are also likely to increase. The shortage of land requires port operators to work closely with community planners and coastal managers to identify options to harmonize waterfront redevelopment and port expansion while maintaining a sustainable marine environment.

Enhancing Intermodal Connections

The movement of goods and people in today's business environment, as previously discussed, requires a competitive logistics system that emphasizes quality service and total cost. Accordingly, the Nation's economy, international competitiveness, and national security increasingly depend on the effectiveness of the intermodal transportation system.

The benefits of an integrated intermodal system can only be achieved by the cost-effective linking of the various modes of transportation. Good intermodal access is a prerequisite to support the growing demand in people and goods transportation.

For example, ports may generate an inland effect on rail traffic. Midwest rail yards and cross-country mainlines are rapidly approaching capacity. Railroads may need to improve hundreds or even thousands of miles inland from the ports themselves to accommodate additional port-related intermodal traffic.[20]

INCREASING NATIONAL SECURITY NEEDS

The contemporary national security landscape is characterized by a rise in international organized criminal activity, along with a growing array of rogue states and terrorists. Accordingly, national security needs are shifting in the areas of:

- Crime;
- Terrorism; and
- Deployment.

Crime

U.S. seaports provide intermodal interfaces that expedite the movement of commerce through the international maritime trade corridors by a complex mix of private sector service providers. These providers include ocean and land transportation providers, shippers, freight consolidators and forwarders, financial institutions, warehousers, labor unions, and the security departments of all parties involved.

A wide range of organized criminal enterprises target seaports and their landside accesses. Criminal enterprises are intent on exploiting these marine intermodal transfer points for a range of economic crime, including cargo theft and smuggling. This exposes millions of MTS workers and the general public to the consequences of illegal activity, which range from higher costs of goods to personal harm.

- In 1995, Americans spent approximately $48 billion to buy heroin and cocaine that originated from foreign sources and were smuggled into the United States.
- The INS estimates that there are 5 million illegal aliens in the United States; they represent nearly 2 percent of the population.
- The National Insurance Crime Bureau estimates that 200,000 stolen vehicles valued at nearly $1 billion were smuggled out of the U.S. last year.

In Fiscal Year 1998, 8.1 million passengers and 5 million cargo shipments entered the United States through our Nation's seaports. Criminals take advantage of the increased tempo needed to move the growing volume of cargo through the MTS corridor by:

- Exploiting vulnerabilities within the MTS, insufficient law enforcement and private sector countermeasures;

- Effecting internal conspiracies involving the acquisition of cargo transaction data and other forms of facilitation;
- Operating fictitious or front firms; and
- Operating in extra-regional criminal alliances for trading products and services.

The practice of using JIT to improve efficiency means that manufacturers and retail businesses will have growing concerns about law enforcement delays in moving cargo and cargo losses from theft.

Terrorism

In addition to the surge in international crime, the end of the Cold War has left in its wake a growing array of rogue states and terrorists. These states and transnational adversaries appear intent on undermining the global forces of integration and the economic and political structures that advance U.S. interests and values. They will most likely avoid a direct challenge to the U.S. Armed Forces and could, instead, target the critical infrastructure, which includes the transportation and communications networks that support U.S. economic power.

The burgeoning cruise ship industry also presents a potent terrorist opportunity for those intent on advancing their cause through publicity or by extracting concessions from national governments by holding their citizens hostage. Passenger vessels and the facilities that embark U.S. passengers are required by regulation to develop security plans to address the prevention of and response to security threats.

When considering its importance and vulnerability, the domestic security of the Nation's marine transportation system requires particular scrutiny. The primary responsibility for physical security falls to the owner/operator of the facility and master of the vessel. In general, requirements for facility and vessel security measures are broad and nonspecific. There are no routine assessments to identify the critical infrastructure and vulnerabilities of ports and waterways, nor is there information sharing among ports and agencies.

Deployment

The United States continues to be committed to a policy of engagement abroad to promote peace, democracy, and prosperity. In order to support our national security objectives, the U.S. must be able to project power, whether that is military force or humanitarian support. The force projection from our nation depends to a large extent — 90 to 95 percent — on sealift deployment.

The force projection and crisis response capabilities that support U.S. national security objectives increasingly depend upon our domestic and commercial mobilization plans and operations. This is especially the case because of the closure of so many overseas bases over the past decade, resulting in a continental U.S. (CONUS)-based force. Likewise the ongoing Base Realignment and Closure (BRAC) initiatives closed several military-owned and -operated ports such as Oakland and Bayonne, resulting in the reliance upon U.S. commercial ports for the deployment of military forces and crisis response capabilities.

DOD planners rely on three sources of sealift: government-owned active duty forces, reserve forces, and commercial transportation partners. The deployment capability requirements of the MTS stem from the DOD's Mobility Requirements Study (MRS), which is presently being reexamined for the 2005 time frame.

Future contingencies of the Operation Desert Shield/Storm-scale will be even more challenging with regard to sealift demands. Current planning stipulates the delivery of forces to theaters within 75 days (compared to the 205 days it took to close the force during Operation Desert Shield/Storm). Concurrent with the greater dependence on commercial ports is the use of larger, deeper draft commercial vessels that depend upon technically sophisticated, highly specialized shoreside facilities for loading and offloading. Ports selected to serve as DOD deployment points are designated as Strategic Ports. The coordination of deployment activities at these strategic ports relies upon the local Port Readiness Committees (PRCs) and National Port Readiness Network (NRPN).

An example of increased reliance on commercial transportation to meet power projection needs is the Voluntary Intermodal Sealift Agreement (VISA) established by DOT, DOD, and the commercial maritime industry. The object of VISA is to provide the DOD a coordinated, seamless transition from peacetime to wartime for the assured acquisition of commercial sealift and intermodal capability to augment government-owned organic sealift capability. VISA capacity may be called upon to provide some early surge deployment of cargo, although the bulk of this capacity is planned for movement of sustaining supplies for DOD forces.

GROWING AWARENESS OF THE ENVIRONMENT

Environmental quality is essential for sustaining coastal and marine ecosystems, commercial and recreational fisheries, and the economic vitality of the marine transportation system. The environmental protection of the MTS ensures its desired efficiency and safety. In recent years, there has been a growing public awareness of potential adverse environmental impacts from the MTS. This trend is expected to continue and will affect how our Nation addresses many MTS issues.

Although current programs address many of the direct environmental threats posed by MTS users, much still needs to be accomplished in implementing existing environmental standards, coordinating environmental goals and objects, increasing public education efforts on MTS environmental issues, and harmonizing environmental protection with sustainable economic growth and national security. Improving integrated and nonregulatory approaches that involve all levels of government, MTS users, and all stakeholders is important in addressing the future trends and challenges in MTS environmental protection.

The MTS Task Force identified three primary areas of environmental issues related to the MTS:

- Ship operations and vessel movements;
- Port development and terminal operations; and
- Dredging.

Because the MTS is downstream of homes, industries, farms, communities, and rivers, the health of the MTS environment is inextricably linked to the health of the ecosystem watersheds. Therefore, a holistic approach of environmental protection to the entire system is needed. Environmental stewardship types of programs that involve all stakeholders from upland to downstream of the MTS are encouraged as a future trend of the MTS environmental program.