

# TRANSPORTATION INDUSTRY STUDY REPORT 1996

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USTRANSCOM, Scott Air Force  
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Port of Baltimore, MD  
Maersk Lines, Baltimore, MD  
USNS CAPELLA, Baltimore, MD  
SS JOHN BROWN  
AMTRAK, Washington, DC  
CONRAIL, Philadelphia, PA  
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## ABSTRACT

Today's transportation industry is well positioned for global expansion and competition. All segments of the industry are currently profitable and are actively seeking faster, better, and more efficient ways to do business, including more ways to make multimodalism into true intermodalism. However, some near-term capacity shortfalls and mobilization issues must be resolved to ensure that the industry can continue to fulfill national security requirements for transportation into the next century.

## INTRODUCTION

Manufacturers, movers of raw materials and finished goods throughout the global marketplace, and the armed forces providing manpower, equipment, supplies, and support to humanitarian efforts or hostilities around the globe all need safe, reliable transportation to succeed.

For the purposes of this study, we reviewed the four major modes of transportation (air, sea, rail, and truck), each of which has its own industry structure, assets, and capabilities. We then looked at how well the modes work together to provide seamless transportation for both commercial and military movements. Finally, we compared current and potential industry capacity with the national security transportation requirements validated in the 1995 *Mobility Requirements Study Bottom-Up Review Update* (MRSBURU).

## THE TRANSPORTATION INDUSTRY DEFINED

Global transportation is available from four distinct modes: air, sea, rail, and truck. In the past, each transportation mode operated independently of the others, in classic "stovepipe" fashion. Shipments that required the use of more than one mode were considered *multimodal*, but each leg of the trip was considered an individual shipment, with the shipper usually negotiating and coordinating. Competition within the transportation industry and today's dynamic, global business environment have led to the increased use of the new transportation strategy known as *intermodalism*, which seeks to minimize the seams in the transportation process in order to streamline movements, increase reliability, and reduce costs.

In most intermodal shipping, the shipper places the cargo into an owned or leased container at the point of origin, and the container is then transported via rail or truck to a seaport and loaded onto a container ship. After arrival at the destination port, the container is unloaded and tendered to rail or truck for delivery to the customer or consignee. This use of containers in intermodal logistics reduces staffing needs, minimizes in-transit damage and pilferage, shortens transit time because of reduced handling, and allows the shipper to take advantage of volume shipping rates. And, ideally, the movement is accomplished under a single bill of lading, with virtually no en-route interaction or effort required by the shipper.

Successful intermodalism is a function of four key dimensions. First, intermodalism requires connectivity between different modes of transportation. It is not enough for the different modes to be in proximity to each other; they must overlap. For example, a seaport provides intermodal capability when it has rail running along the dock so that cargo can be unloaded from a ship directly to a rail car. Second, cargo must be packaged in standard containers so that it can be handled more expeditiously. The internationally recognized 20-foot container is the most common example. Third, specially designed cargo-handling equipment is needed. Two examples are rail well cars that hold double- or triple-stacked containers and the huge cranes with spreaders that snatch containers weighing up to 80,000 pounds and load them on and off ships. Finally, a transportation system cannot be truly intermodal without information systems that track movement and manage the flow of cargo from origin to final destination.

## **CURRENT CONDITIONS**

### *Air*

The United States is truly an air-oriented nation. It contains more airports than are in the entire rest of the world, and they are serviced by more than 200 air carriers. Additionally, over 184,000 aircraft are registered in the United States, and 6 of the top 10 airlines in the world are U.S. carriers. Air transport is the "premium" way to move people and cargo in that it is both the fastest and most expensive mode. For most air carriers, passenger

revenues account for the vast majority of income, with cargo (at 4-6 percent of revenues) of little consequence. Air transport, often the most efficient means of transporting people, cannot compete with other modes in transporting low-value, high-bulk cargo. Most air freight, therefore, is high-value, time-sensitive material. Air carriers specializing in overnight, express, and small-package deliveries, such as Federal Express, United Parcel Service (UPS), and DHL, now account for more than 50 percent of domestic air freight.

After five years of staggering losses, the U.S. airline industry reported record profits of \$5.3 billion in 1995, and airline stocks soared by over 46 percent. The latest Department of Transportation (DOT) statistics show that revenue passenger-miles exceeded 500 billion, an increase of almost 90 percent in the past 15 years. Revenue ton-miles of freight exceeded 22 billion, an increase of 125 percent since 1980. Even with these numbers, however, the airline industry's profits, at approximately 2 percent per year, trail nontransportation industrial profits by a full 3 percent. The main cost and profit driver is the cost of fuel, which often fluctuates significantly from one year to the next.

The DOT and the Air Transport Association project that the record-breaking profits posted by the U.S. airlines in 1995 will continue for the foreseeable future, with the majority of the industry's growth taking place internationally. Between 1987 and 1993, international traffic increased by 47 percent while pure domestic traffic increased by only 6 percent. This shift in market emphasis has generated an increasing number of alliances and mergers between domestic and foreign carriers. Yet the continued health of the air transportation industry remains closely tied to the overall U.S. economy, since 90 percent of airline profits are derived from passenger travel, and half of that figure is derived from business travel.

### *Sea*

The U.S.-flagged deep-sea intermodal shipping industry carries merchandise between U.S. and foreign ports in direct connection with other merchant vessels in the world fleet. Strategic in nature, it is interconnected to the domestic segments of air, rail, and trucking at seaports. By nature, waterborne shipping is particularly suited for

movement of heavy, bulky, and low-value-per-unit commodities for which speed is not of primary importance.

The U.S. share of the global oceangoing shipping industry continues to be small. In 1993, only 17.0 million tons (16.2 percent) of a worldwide total of 104.8 million tons of commercial liner cargo was carried on U.S.-flagged vessels. In 1984 the U.S. total was 13.8 million tons, or 21.7 percent. The total value of liner cargo carried in 1993 was \$344.7 billion, with U.S.-flagged vessels transporting \$69.2 billion worth, or 20.1 percent of the total; in 1984 the U.S. share was \$41.2 billion. The net earnings of the entire U.S.-flagged foreign-trade liner fleet were only \$119 million in 1992.

In 1985, the U.S.-flagged fleet numbered 477 ships. By 1994, that number had dropped to 332 U.S.-flagged vessels actively engaged in commerce: 27 break-bulk cargo ships, 129 intermodal vessels, 154 tankers, and 20 bulk carriers. Since 1994, 30 U.S.-flagged vessels have either been scrapped as inefficient or reflagged to a flag-of-convenience. Although the United States has experienced a decline in the total number of ships in liner service, today's new ships are much larger, resulting in an 81 percent increase in actual liner tonnage carried by U.S.-flagged ships between 1984 and 1993.

## *Rail*

Railroads have been moving the nation's freight and passengers for over 165 years. However, today's rail network is considerably more streamlined than its 19th century forebears. In 1994, 531 railroads in the United States operated over 169,000 miles of track. Motor vehicles and airplanes have made passenger trains nearly obsolete, and the remaining passenger rail service, Amtrak, is unprofitable. Instead, modern U.S. railroading is focused on long-haul, heavy cargo movements--for which it is well suited, including commodity moves, such as coal and grain, and the transport of intermodal containers, motor vehicles, and heavy equipment.

In the 1960s and 1970s, transportation pundits predicted that the U.S. railroad industry was in its death throes. Saddled with an obsolete infrastructure, a bloated and strongly unionized labor force, and pervasive federal regulation, railroads were unable to compete with the trucking

industry for the nation's freight business. Yet today's railroads are strong once again. In 1994, they carried 1.2 million revenue ton-miles, nearly 40 percent of the nation's freight, for an annual revenue of over \$33 billion and a 30 percent increase over 1980 levels. This profitability was reflected in Standard & Poor's rail stock index, which grew 198 percent between 1987 and 1994.

The railroad industry's turnaround was made possible in large measure by the consolidation of railroad companies through acquisitions and mergers. Today only 10 Class I railroads (those with revenues over \$255.8 million) remain in the United States, down from 40 in 1979. This dramatic concentration is also seen in the industry's market-share breakout: in 1974, the 5 largest U.S. railroads earned only 40 percent of total railroad revenue, while in 1994 the top 5 railroads accounted for 85 percent of industry revenue. The consolidated railroads have been able to eliminate duplicative overhead, shed unproductive lines, update infrastructure and equipment, and make better use of labor resources. In addition, deregulation has allowed them to get out of unprofitable business sectors and focus on what railroads do best: move freight over long distances. Thus the average length of a railroad haul rose from 515.1 miles in 1970, to 615.8 miles in 1980, to 816.8 miles in 1994.

The deregulation and consolidation of the industry have facilitated several other rail transport initiatives. Railroads now conduct business under shipping contracts that set negotiated rates by shipper and commodity. Shippers benefit from reduced shipping rates and guaranteed service, while railroads benefit from more level, predictable business activity and improved equipment utilization. An estimated 60 percent of rail freight now moves under nearly 40,000 contract agreements. Additionally, the pooling of limited capital investment funds has allowed railroads to make substantive improvements to their industry-funded infrastructure, including centralized traffic control systems, more powerful and fuel-efficient locomotives, electronically controlled brakes, sophisticated signaling systems, and modern, intermodally configured rolling stock. Finally, merged networks of modern trackage and equipment have facilitated the interaction with other transportation modes necessary for intermodalism and in-transit visibility.

## *Trucks*

The trucking industry moves products from one point to another using either for-hire carriers, which transport freight that belongs to others, or private carriers, which are operated by individual manufacturers, wholesalers, and merchants for delivery of their own goods. General freight carriers generate the majority of all truck revenues. Specialized carriers include carriers of heavy machinery, liquid petroleum, refrigerated products, agricultural commodities, motor vehicles, building materials, and household goods.

As a strategic industry, trucking offers flexibility and versatility. An efficient motor carrier can compete with an air carrier on point-to-point service for a shipment of any size for distances of fewer than 500 miles. Trucks can compete with rail carriers for truckload-sized shipments that are transported 500 or more miles and weigh less than 100,000 pounds. And since the present intermodal infrastructure is not fully capable of seamless rail-sea, rail-air, or air-sea connectivity, trucks usually fill the seams and function as the linchpins of the intermodal process. In 1995, 77 percent of total freight revenue and 45 percent of total freight tonnage moved by truck, and trucking accounted for 3 percent of the nation's gross domestic product (GDP). In terms of productivity, freight movement by trucks has increased by 60 percent since the 1980s, to over 880,000 million ton-miles in 1993. The total revenue of the trucking industry increased by 87 percent over the same period to over \$292 billion in 1992.

Over 5 million Americans are employed in truck-related occupations. The number of trucks on U.S. roads has grown by 35 percent since 1980, reaching over 45 million registered trucks in 1992, and the number of new trucks added to the fleet every year has remained steady at 8-10 percent, indicating a healthy replacement rate as trucks stay in service for about 10-12 years. This fleet of trucks travels a network of paved roads that measured over 2.4 million miles in 1992, an increase of 15 percent since the 1980s. And the highway infrastructure receives over \$150 million annually from federal, state, and local governments. While environmental issues remain a major concern, trucks have reduced carbon monoxide emissions by 37 percent and fuel consumption by 17 percent since 1980. Positive safety trends have also produced a 16 percent reduction in truck accidents over the past 30 years.

## **OUTLOOK**

In general, we found the transportation industry to be well positioned to pursue further expansion and global competition. All segments of the industry are currently profitable and are actively seeking faster, better, and more efficient ways to do business, including more ways to make multimodalism into true intermodalism.

The Federal Aviation Administration (FAA) forecasts that air traffic growth will continue at 4 percent per year domestically and 5.8 percent internationally through 2006. Domestic air freight growth is expected to continue at 6-7 percent per year through 2013, while international air-freight traffic is projected to grow at almost 18 percent per year.

Anticipated growth in the international container shipping market has led to the purchase of 100 new, large-capacity container ships, to be delivered by 1997, representing a 27 percent increase in the world containership fleet. More than 40 of these ships are expected to be used in the U.S. trade lanes, which should accommodate the projected 1996 U.S. trade growth of 6 percent for imports and 10 percent for exports. Similarly, railroad analysts predict another 2.4 percent increase in rail traffic, following 10 consecutive years of similar traffic gains. Intermodal business, which is expected to make up the bulk of the rail increase, is predicted to grow about 4.8 percent annually through 2004, to 13 million units. Additionally, regional and short-line railroad companies will continue to grow, creating new markets on feeder lines abandoned by the major railroads. The American Trucking Association predicts that the trucking industry should see healthy revenue increases estimated at 24 percent over the next decade. And ports will continue to play an essential role in the U.S. economy, with foreign trade through the port system expected to surpass 20 percent of GDP by 1998.

## **CHALLENGES**

We found that the industry is, for the most part, currently capable of supporting mobilization requirements consistent with two nearly simultaneous major regional conflicts (MRCs). However, some near-term capacity shortfalls and mobilization issues must be resolved to sustain this

capability into the next century. Following are some specific challenges for the transportation industry.

### *Surface Transportation*

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 increased government funding levels for surface transportation programs and gave them more flexibility. The ISTEA established authorizations for highways, highway safety, and mass transportation that amount to about \$155 billion more than in FY 1992-97. The purpose of the act is clearly enunciated in its statement of policy: "To develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner." Follow-on legislation currently being discussed in Congress would extend this funding commitment past 1997.

### *Air*

Increased competition, brought about by deregulation since 1978, has forced some less competitive and less viable air carriers to close their doors and others to merge in order to stay viable. Stiff competition will continue to force closures and mergers in the future. The main challenges facing the domestic airline industry include international access and competition, government policies and requirements, and infrastructure and prime equipment requirements for the next century. Airlines are faced with huge capital investment requirements if they are to maintain state-of-the-art aircraft in their fleets. Older aircraft are less fuel efficient and grow increasingly expensive to operate and maintain. New, replacement aircraft have smaller crew requirements and more quiet, fuel efficient engines, but purchase prices can easily exceed \$100 million. And those carriers fortunate enough to be able to procure new aircraft are faced with a shrinking number of commercial aircraft suppliers.

A relatively new feature in the industry is globalization of airlines. A 1995 General Accounting Office report stated that existing bilateral pacts between the United States and 72 other nations greatly restricted the airlines' ability to participate in foreign markets (General Accounting Office, 1995). The result is that more and more carriers have entered into

code-sharing agreements whereby U.S. and foreign carriers agree to share flight numbers, passengers, and even equipment to ensure access to international markets. Since 1992, the number of code-sharing agreements has increased from 19 to 61. Three of these alliances--Northwest/KLM, USAir/British Airways, and United/Lufthansa--are considered "strategic" since they affect key routes and assets. Industry analysts fear that the continued growth of code-sharing agreements could result in decreased competition as large, multicarrier alliances deny market access to non-alliance members. Code sharing could also have a negative affect on U.S. national security. If domestic carriers become too reliant upon code sharing for access into international markets, they will be less inclined to purchase and maintain large, wide-body aircraft for international overseas flights. Without these aircraft in their inventories, domestic carriers will be unable to adequately support Department of Defense (DoD) mobilization requirements.

This situation could become further complicated by carrier mergers, especially mergers of domestic and foreign carriers, which may result in the complete loss of control over what had been purely domestic carriers. For example, British Airways now owns just under 25 percent of USAir and has three seats on USAir's 16-member board of directors. U.S. law currently restricts foreign interest in U.S. airlines to less than 25 percent. A 1991 interpretation of the law by then-Secretary of Transportation Samuel Skinner allowed foreign investment of up to 49.9 percent in "total equity" and voting interest of less than 25 percent. In 1993, the U.S. Commission on Airline Competitiveness recommended that foreign investors be permitted to control 49 percent of voting interest in the belief that the less-than-majority control would still ensure strategic access to Civil Reserve Air Fleet (CRAF) aircraft and crews. The CRAF program, the cornerstone of the U.S. strategic civilian airlift capability, is a civil/military partnership, administered by the DOT, under which commercial air carriers contractually agree to provide aircraft and crews to support DoD airlift requirements in national defense emergencies. If foreign carriers gain veto authority over U.S. commercial aircraft use in wartime, the national security of the United States will be compromised.

## *Strategic Airlift*

The MRSBURU validated an airlift requirement of 53 million ton-miles per day (MTM/D) as the baseline for U.S. strategic airlift capability. The introduction of the C-17 into the Air Force inventory, combined with a viable CRAF program, ensures that the DoD can meet its stated strategic airlift requirement. As the DoD continues to shrink, however, the amount of DoD business offered to CRAF members as the main incentive for their continued participation in the program will also decrease. The DoD must, at the very least, be aware of the decreasing incentive for CRAF participation and find additional incentives for the carriers.

CRAF currently provides over 18 MTM/D of the DoD-approved 53 MTM/D airlift requirement, equaling over 90 percent of the U.S. long-haul passenger capability, more than 30 percent of the U.S. long-haul cargo capability, and 36 percent of the U.S. aeromedical evacuation capabilities. However, no U.S. carriers have purchased CRAF-compatible wide-body aircraft since 1988, and the average age of the CRAF fleet is 22.7 years (63 percent of the fleet is over 25 years old). CRAF compatibility implies that the aircraft will readily accept the standard DoD cargo pallets, has been modified for rapid conversion to a cargo configuration, or has been modified for conversion to a medical evacuation configuration. The government encourages carriers to purchase CRAF-compatible aircraft, such as the Boeing 747-400, but they cost considerably more than the aircraft preferred by most carriers. Today's best-selling commercial aircraft are more fuel efficient, use two engines as opposed to the 747's four, and require fewer crew members to operate. They can also cost up to 50 percent less than the 747 (\$150 million per 747 versus \$80 million for the MD-11 or Boeing 767, or \$45 million for the European-built A300). The DoD should consider subsidizing the purchase of CRAF-compatible aircraft to ensure that carriers keep a minimum number in their fleets for mobilization needs.

Another CRAF incentive is the Commercial Access to Military Installations program, which provides carriers access to new airfields and geographical areas of operation. In addition, carriers could save millions of dollars in fuel expenses by using military installations as transfer points or alternative emergency landing sites. The Federal Acquisition Streamlining Act allows the DoD to open its military fields to commercial

CRAF members, but DoD components (i.e., base commanders) have been slow to accept the practice.

The government and carriers negotiated new CRAF rates. During Operations Desert Shield and Desert Storm, however, carriers received less than 50 percent of what they believed was a fair and reasonable rate for the services they provided. In addition, the carriers' request for additional War Risk Insurance proved to be a major point of contention. The DoD cannot expect full support for CRAF unless it is willing to minimize the tension between itself and the carriers in light of the decreasing amount of business it can offer in peacetime and its increasing dependence (now over 50 percent of DOD's potential airlift capability) upon the CRAF program in wartime.

### *Airports*

While the nation's aging air traffic control (ATC) system has not contributed to any accidents, it has had several breakdowns that resulted in significant disruption and delays in commercial air traffic. The FAA began to upgrade the current system in 1981, but despite 15 years and several billion dollars, it has not succeeded, as its efforts have fallen victim to the lengthy federal acquisition planning process and the "requirements creep" inherent in the desire to take advantage of continuing technological innovations. Efforts to incorporate the latest technologies into planning and funding cycles have driven up costs and resulted in significant system delays. Contributing to this situation was the FAA's lack of experience in major systems definition, acquisition program management, and contractor oversight requirements. These factors, coupled with the fact that the FAA has had seven administrators in the past 10 years, were a recipe for acquisition failure. During these years of futility, projected acquisition costs for ATC replacement systems have risen by more than 50 percent. While the latest projections are that a new ATC will be fielded at the turn of the century, the government should pay concentrated attention to the management and funding of this critical program. The health, safety, and stability of the U.S. air transportation industry is closely tied to the ability to control air traffic.

## *Sea*

The maritime shipping industry is the last bastion of heavy federal regulation of transportation. The maritime deregulation legislation currently before Congress contains several elements that may result in more competition for available freight and a consolidation of major carriers. The most important are contract confidentiality, elimination of tariff filing, and the sunset of the Federal Maritime Commission. As in the now-deregulated air industry, this increased competition will encourage the emergence of new global transportation alliances that will allow ocean carriers to share not only assets, such as vessels, but also container equipment and terminal facilities.

The greatest challenge facing today's U.S. merchant marine fleet is the ongoing debate over the role of subsidies in maintaining an adequate U.S. capability to meet national defense needs. U.S. mobility plans rely heavily on the U.S.-owned merchant fleet for the sustainment of U.S. forces deployed overseas, and subsidies have been considered a cost-effective means of ensuring that military-useful vessels, primarily container and a small number of roll-on/roll-off (RO/RO) ships, are available. The Operating Differential Subsidy (ODS), which expires in 1997, offsets higher costs associated with all-U.S.-citizen mariner crews. The new subsidy program, the Maritime Security Act of 1995, would provide approximately \$2 million per ship for 50 U.S.-flagged ships, but is currently stalled in the Senate. Proponents argue that the subsidy is necessary to guarantee that U.S.-flagged and -operated shipping is available to ensure support in a contingency. Opponents believe that the 10-year program's \$1 billion price tag is too steep and that U.S. cabotage laws (the Jones Act) and government cargo preferences adequately support sufficient sustainment capacity in the U.S.-flagged fleet. Subsidy opponents also note that U.S. shipping that does reflag will remain under effective U.S. control and will continue to be available to meet defense needs. Subsidy programs must be balanced against the need for other maritime programs, such as the procurement of additional surge RO/ROs, large, medium-speed RO/ROs (LMSRs) and afloat pre-positioning vessels for the U.S. Ready Reserve Force (RRF). The RRF was created to maintain a surge shipping and resupply capability that would be available on short notice to support the development of a multidivision force.

## *Strategic Sealift*

The United States, as evidenced during Operations Desert Shield and Desert Storm, maintains an immense capacity for projecting military power abroad. Key to this ability are U.S. sealift assets, both organic military and commercial. Broadly defined, U.S. sealift is divided into three categories: afloat pre-positioning, surge, and sustainment. The categories of most concern are pre-positioning and surge sealift, the organic lift required to rapidly move the material that comprises elements of Army divisions and Marine Corps forces in the initial stages of an operation. Current RRF capability is approximately 3.8 million square feet short of the 10 million square feet of surge lift required in 2001. The organic pre-positioning and surge shipping shortfalls will be made up by the acquisition of 19 LMSRs. The lead LMSR was completed in May 1996, and the program is currently funded through the 13th vessel, but construction delays have stretched final delivery 15-22 months beyond the original goal. Furthermore, another key component of the surge program is the acquisition of five additional RO/ROs. The outcome of this purchase is also in question because of congressional reluctance to buy foreign-built ships, even though money is not currently available to purchase more expensive, U.S.-built RO/ROs.

In the area of sustainment shipping, the number of liner vessels worldwide will continue to increase, but the number of U.S.-flagged vessels will continue to shrink, taking with it a significant number of U.S. civilian mariner positions. This trend may create shortages of RRF crews in the future.

## *Seaports*

Today over 175 commercial cargo ports in the United States each handle in excess of 250,000 tons of cargo annually. In 1992, U.S. seaports handled approximately 2.9 billion metric tons of cargo and supported over 15 million jobs, with approximately 95 percent of all U.S. exports and imports passing through U.S. seaports annually. Seaports also play an important role in national security by handling essential cargoes for military operations. Over the past two decades, however, a number of factors have complicated the development, operation, and maintenance of the nation's harbors, particularly in the area of dredged material

management. These factors include increases in the demands of commerce, the rapid evolution of shipping practices (containerization and intermodalism), heavy population shifts to coastal areas, increasing environmental awareness, and a general lack of fiscal support for port development projects. Of primary concern to the deep-draft port facility owners is the need to develop dredging operations for essential harbor and berthing areas in a timely and cost effective manner, consistent with environmental quality controls. One of the principal difficulties in the dredging process is how to manage and dispose of dredged material, some of which has been contaminated by years of harbor pollution. A major challenge is to evaluate the presence of contaminants in the dredged material and then identify the best scientific method of segregating contaminated sediments from the marine environment.

Several legislative concerns serve as challenges to the survival of the ports system. For example, the Tax Reform Act of 1986 has inhibited the ability of public ports to issue tax-exempt bonds to finance needed infrastructure and functionally related facilities. The Water Resources Development Act of 1990 is inadequate to support the dredging requirements of most U.S. ports. Finally, changes to the ISTEA will have a direct bearing on the port structure, an increasingly critical component to an integrated intermodal transportation system.

### *Rail*

Perhaps the greatest single concern about railroad mergers is reduction in competition and its associated pressure on shipping rates. For example, the recent spate of mega-mergers, if allowed to continue, will create two railroad giants in the West: Union Pacific and Burlington Northern Santa Fe will control 90 percent of car holdings west of the Mississippi and 60 percent of total industry revenues. Such consolidation has led to concern over monopolistic pricing and routing decisions. Railroad mergers and the streamlined intermodal long-haul network have also affected overall railroad capacity. The Staggers Rail Act of 1980 made it easier for railroads to abandon unproductive rail lines, and the industry rapidly took advantage of this opportunity. Railroad trackage has now been reduced from 217,552 miles in 1960 to less than 120,000 miles today, a significant reduction in rail access, with most service interruptions on branch and feeder lines.

## *Trucks*

The trucking industry faces the challenge of an aging and static infrastructure that will be inadequate to meet the increasing demands of the future. In the past 30 years, the highway infrastructure, consisting of roads, bridges, and tunnels, has come to play a vital role in supporting the nation's growing economy. The future portends steady growth in the U.S. population and globalization of commercial trade that will require a larger and more efficient highway network. However, current highway facilities are characterized by deferred maintenance, saturated capacity, and lack of expansion projects. The U.S. highway infrastructure is aging, deteriorating, and breaking down, as evidenced by deficient bridges and roads and congestion on urban interstate highways. An inadequate and inefficient highway network constrains productivity, increases operating costs, endangers public safety, and inhibits U.S. competitiveness in the global economy. The United States must commit to a national agenda of preserving existing facilities that are in sound condition and enhancing the capacity of the infrastructure to meet the transportation needs of the future.

Another challenge for trucking is an inadequate manpower base in the accession and retention of high-quality drivers. And the continued demand for a cleaner and safer environment may lead to new restrictions on truck operations or fuel use, more expensive vehicle and driver operating standards, or new taxes on diesel fuel. Such measures would affect the operating costs of the trucking industry and, ultimately, the cost to the consumers.

## *In-Transit Visibility*

The DoD is faced with the challenge of developing and implementing an automated In-Transit Visibility (ITV) system that is synchronized with ITV systems in the commercial marketplace. ITV is the automated capability to identify and track the movement of defense cargo, passengers, medical patients, and personal property from origin to final destination during peace and war within either the commercial or defense transportation pipelines. The change in U.S. military strategy from "forward presence" to "CONUS-based power projection force" relies on

ITV to plan, execute, and sustain the rapid deployment of combat and support units.

While the DoD is implementing the Global Transportation Network (GTN), which is designed to be compatible with asset-visibility systems in the commercial sector, some concerns remain. In the commercial sector, the various modes of transportation differ in their ability to provide ITV data at the GTN level of detail. The air and truck transportation leaders, such as Federal Express and UPS, have invested heavily to obtain real-time and detailed data on movement of material. By establishing the processes, systems, and manpower required to track material movement on a detailed level, these companies increased their competitive advantage in their business. However, rail and sea transporters move primarily containerized cargo that is not time sensitive. Thus to compete they do not have to provide detailed, real-time ITV information. This lack of standardization in commercial systems affects impacts the DoD's overall effort to achieve in-transit visibility for all DoD material.

## **GOVERNMENT GOALS AND ROLE**

We recommend the following roles for the government in ensuring the future health of the U.S. transportation industry in an increasingly global competitive environment and in ensuring that the United States has adequate shipping capacity to meet national security requirements.

1. Despite 1991's ISTEA initiative, there remains a lack of national leadership in establishing a comprehensive strategy for intermodal transportation. The federal government must take the lead in breaking down the transportation modal stovepipes, beginning with reorganizing the DOT, restructuring infrastructure funding streams, and collecting data on intermodal activities.
2. The government's role in regulating the economic aspects of U.S. transportation has diminished considerably over the past 20 years, yielding substantial savings for consumers of transport and a major increase in flexibility and shipping options. This trend should continue; residual federal regulation should be confined primarily to the areas of

safety, environmental issues, interoperability, and adequate market competition within each mode.

3. The United States should eliminate direct maritime subsidies. The U.S. maritime industry and many defense officials contend that these subsidies are necessary to offset the higher costs of U.S. mariners required on U.S.-flagged ships, but we believe current cabotage laws and government cargo preference policies are adequate to maintain a responsive U.S.-flagged fleet. In addition, those U.S. ships that reflag will remain under effective U.S. control and will still be available to meet national security needs.

4. To meet surge requirements, the government must fund the purchase of five additional RO/ROs, keep the LMSR program funded, and avoid further slippages in their delivery.

5. The United States must implement policies to ensure that an adequate number of U.S. mariners are available to man the RRF. The government should consider giving mariners an annual stipend, similar to the bounty program used by the British, in exchange for RRF availability. Additionally, Congress should pass legislation guaranteeing reemployment rights for mariners called away from civilian jobs. We also recommend establishing agreements with labor unions in order to (1) use available manpower more effectively by reducing RRF crews to a size that is in line with current international merchant marine practices and (2) identify and train unlicensed deck personnel on inland waterways for assignment to RRF ships.

6. The DOT must ensure the viability of the nation's ATC system. Confusion and setbacks in the ATC upgrade program have shaken the confidence of both the industry and its customers. With air traffic predicted to increase, the DOT leadership must put the full weight of its attention on resolving this potential crisis.

7. The DoD must continue to give commercial air carriers incentives to participate in the CRAF program and must give full consideration to subsidizing the purchase of CRAF-compatible aircraft.

8. The DoD must ensure that it remains compatible with the rapidly evolving commercial sector in such trends as containerization of cargo, intermodal handling procedures and equipment, and information systems.

9. The federal government must initiate partnerships with state and local governments and private industry to plan, finance, and construct new facilities and additional capacities in the transportation network. One source of financing is through direct user fees such as take-off and landing charges for air carriers and road/bridge tolls for surface carriers. Federal funds must be allocated to projects that improve the performance of the national system as an integrated transportation network.

## **CONCLUSIONS**

The U.S. transportation industry is healthy and growing stronger. As intermodalism becomes inculcated into business practices, all segments of the industry will synergistically interact to provide seamless service at an efficient and cost-effective rate. Working together, the country's organic military and commercial transportation assets provide most of the lift required to support the two-MRC scenario. The shortfalls that do exist have been specifically addressed by the current administration and will, for the most part, be rectified by acquisition of the C-17 aircraft and additional LMSR vessels. Finally, the government has a definite role to play in repairing or replacing the nation's aging transportation infrastructure. While there is some room for improvement, our study concluded that the United States is the world leader in transportation and will remain so as the nation moves into the next century.

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\*U.S. G.P.O.:1996-405-201:40015