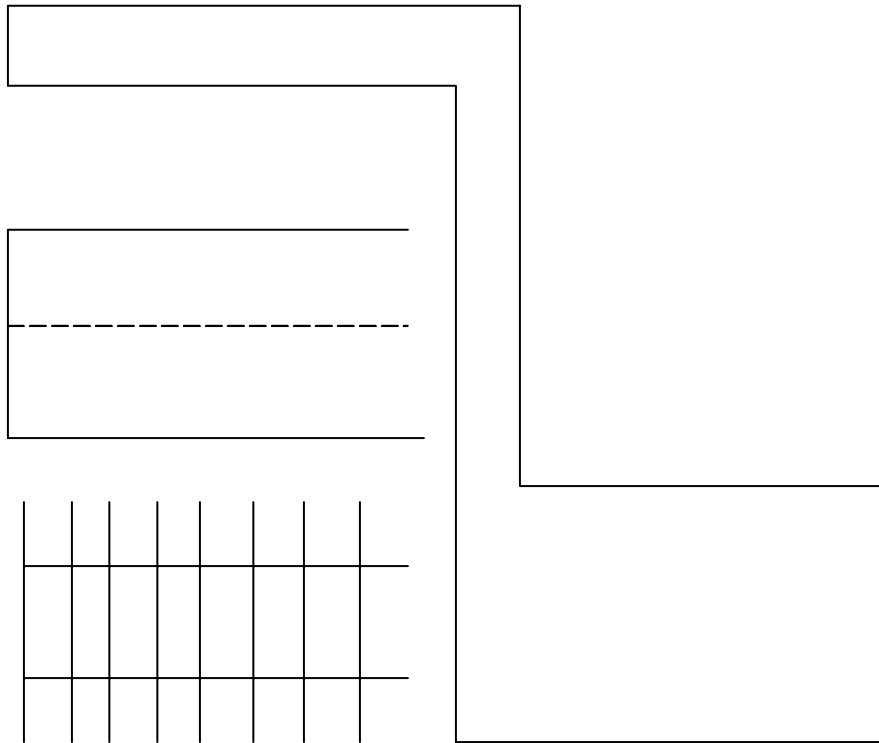


WHERE THE RUDDERS MEET THE ROADS

How the maritime industries can partner in America's overall transportation system in the coming age of freight plethora.



A Project of the

Gulf/Rivers Intermodal Partnership (GRIP)

**Produced by the Secretariat
Central Region
Maritime Administration
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VISIONS

Short Sea

A domestic maritime intermodal system operated by the private sector on the U.S. Gulf coast, seamlessly connected to other land and water transportation hubs capable of moving sufficient freight in partnership with the land modes to substantially reduce predicted highway congestion and thereby contribute to the economy and ecology of the nation.

The required infrastructure realized by the provisions of consensus among federal, state, and local governments and port authorities.

The required vessel realized through the efforts of the public and private maritime communities to assure reasonable profitability while safeguarding the principles of the Jones Act and conforming to relevant safety standards.

Inland Rivers

A domestic maritime container-on-barge system on the Mississippi River system (including the Ohio River, Gulf Intracoastal Waterway and the Tennessee-Tombigbee Waterway) capable of moving sufficient freight in partnership with the land modes to substantially reduce predicted congestion on highways and thereby contribute to the economy and ecology of the nation.

The required infrastructure realized by the provisions of consensus among the federal, state, and local governments, port authorities, and private industries.

The required vessel realized through the efforts of the public and private maritime communities to assure reasonable profitability while safeguarding the principles of the Jones Act and conforming to relevant safety standards.

SUMMARY

A growing gap exists between land mode capacity and transportation demand. If the gap is allowed to widen further, the transportation system will become congested and thereby, in varying degrees, negatively impact the economy and national security.

If and when such land mode congestion occurs, for the regions that are fortunate enough to be able to utilize it, the maritime mode is the most practical, economical, ecologically benevolent, and sustainable alternative. Nearly 100 maritime experts who participated in *Project Where the Rudders Meet the Roads (RMR)* agree that the marine mode can offer significant relief from future highway congestion.

To establish orderly, domestic waterborne systems, assistance will be required. Surprisingly, a majority of the *Rudders Meet the Roads* participants stated that funding was not their most urgent need. Rather, "leadership" was what they said they needed most. Since modal specialization is so pervasive in today's culture, these experts counsel that the new leadership must be overarching.

The need for innovative funding was a very close second to the need for creative leadership. The coastal sea lanes and inland waterways routes are essentially in place. Fortuitously, the cost of converting or constructing domestic terminals will be significantly less than that required for new international trade terminals. The vessels will be costly, and therein lies the need for innovative means of financing.

This report does not suggest that the government's efforts should be limited to the GRIP region. Clearly it should encompass all regions that face potentially severe congestion on the land modes and have the necessary maritime assets to establish short sea shipping and/or container-on-barge services. However, the maritime community of the Gulf South or the Gulf/Rivers Intermodal Partnership (GRIP) region possesses an overwhelming abundance of maritime assets amid immense industrial and agricultural markets. As such it is a most fertile venue for a program to renew domestic short sea services and improve utilization of container-on-barge services. The freight most indige-

nous to the GRIP region is industrial stock and agriculture products--heavy, voluminous cargoes ideally suited for waterborne trade.

In contemplating the two domestic systems, container-on-barge and short sea shipping, the synergistics make it tempting to pattern a single interlinked system. However, there are many substantial distinctions, so it will be best to allow each system to develop separately, unhampered by the growing pains of the other. The systems can merge effectively with maturity.

The existence of domestic waterborne systems will have profound national security advantages: The sea-going vessels and the crews will be merchant marine assets in time of war. Less congested highways and railroads will be available for emergency use. The waterborne systems will provide an alternative transportation system in the event of terrorist attacks.

The side benefit of NAFTA and South American trade should not be overlooked. Short sea domestic vessels will have much in common with those engaged in short sea trade routes and the two should be able to operate to each other's advantage.

This report recommends an effort to increase the use of the maritime mode in the overall transportation system. The transformations are initially regional in nature with the prospect of becoming multi-regional. They are also multi-agency, multi-level of government, industries/governments partnerships.

The Plans of Action call for an infrastructure effort utilizing the federal/states consensus concept, *Consensus Building for Intermodal Network Efficiency (Combine)* and a *Domestic Affordable Vessel Effort (DAVE)*.

THE 2X3X FACTOR

A growing gap exists between land mode capacity and transportation demand. The gap is predicted to widen with eventual severe consequences for the land modes and the nation in general.

Critical transportation congestion occurs when a series of circumstances combine to create unusually severe jams. One recent example of this was the immediate aftermath of the Union Pacific/Southern Pacific merger. Two highly efficient railroads combined and, for an extended period thereafter, became less efficient. In the 1970s the former Soviet Union purchased more grain than it could receive or the United States could deliver. Both countries' transportation systems were more than adequate for normal demands, but when overtaxed, all systems experienced gridlock. The fact that the United States has the world's best overall transportation system does not make it immune to the cancer of congestion. Indeed there are developments which could create a perfect transportation jam.

The *2x3x demand factor* is shorthand for a two- to three-fold increase in the overall demand for transportation services in a 20 to 25 year period. Without challenge, in the previous decade, expert forecasters made such predictions. If such demands for transportation services can be met, they will usher immense opportunities for all transportation providers and assure national economic wellbeing. However, this unprecedented opportunity is mined with unprecedented requirements. Failure to meet the requirements equates to default, and that could well be ruinous to transportation providers and to the overall health of the nation. This doubling or tripling of demand includes both domestic and international transportation services. In varying degrees, it affects all sections of the United States.

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Arguably, *2x3x* is the most important factor in transportation planning for the next two decades. The records of the first six years of freight movements in the 1995-2020 demand period verify that, if maintained, *2x3x* multiplication is, on the average, in process.

The prospects of *2x3x* become worrisome because, while the general transportation demand is rising along the *2x3x* curve, there is not a corresponding escalation in the capacity of the nation's transportation infrastructure or in

its efficiency. With neither productivity gains nor infrastructure expansions keeping pace, much of the existing infrastructure is approaching, at, or past the point of diminishing efficiency. This is not to say the entire infrastructure is overloaded, but its interdependency is threatened. In a transportation chain, the weakest links govern the system. Fixing the problem is more than a simple matter of will. Financial priorities compete within the enormity of 2x3x demand needs, but even if funding were not a consideration, environmental practicality would continue to be a determinant.

A leap in productivity of 2x3x proportions, hypothetically, could rescue the situation. The containerization revolution, which began in the 1950s, tripled ocean carrier productivity by the 1980s. However, viewed as a part of the continuum, the container revolution was an isolated spike among otherwise gradual increases in productivity. Technological innovations doubtlessly will assist in meeting the 2x3x service demand, but nothing appears to be on the horizon which will repeat the breakthroughs of the 1950s.

So there are no easy, overall solutions: If the infrastructure is tripled, communities and habitats are compromised. If the infrastructure is not enlarged highways and railroads and ports are clogged with impeded, emission belching propulsion units. There is no guarantee, or even credible indications, that innovation will solve the dilemma. Sheer willpower coupled with the "do more with less" ethic will be inadequate under the circumstances. However, "do more with what you have" offers a practical promise - if the "what you have" includes the totality of capacity of a truly intermodal transportation system.

The practicality of using the entire infrastructure to the best overall advantage is the one solution that can be most beneficial to all modes. The 2x3x factor has not impacted the modes of transportation equally, and will not do so. The most under-utilized portion of the infrastructure is the maritime sector. It is practical, economical, and ecologically sensitive. There are 25,000 miles of waterways that are not near capacity, some with a growth rate as low as one percent. The inland and deep-sea ports in general have unused capacity. Thus, uniquely, the maritime mode is naturally and professionally willing and able to be an intermodal partner with land modes in the great 2x3x challenge of Century 21.

"do more with what you have" offers a practical promise...

PROJECT WHERE THE RUDDERS MEET THE ROADS (RMR)

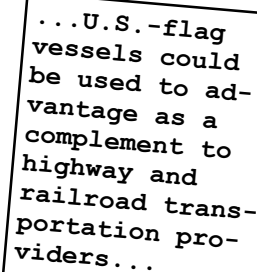
Nearly one hundred transportation and maritime experts from the Gulf/South envision alleviation of potential congestion on parallel rail and highway routes by:

- re-establishment of a domestic short sea shipping system including high speed ferries serving Gulf Coast ports, connecting with other transportation systems carrying unitized cargo (highway trailers and/or containers); and
- expanded use of the inland waterways for domestic transportation of unitized cargo on barges, commonly referred to as container-on-barge (COB).

The transportation and maritime experts who participated in *Project Where the Rudders Meet the Roads (RMR)* were intellectual contributors at one of five 1-day RMR sessions. Participants came from regional academic institutions, deep sea marine carriers, shallow draft marine carriers, metropolitan planning organizations, not-for-profit professional transportation organizations, port authorities, state departments of transportation, and U.S. Department of Transportation agencies.

The RMR participants' briefings included the following:

Basic Objective: The Gulf\Rivers Intermodal Partnership (GRIP) instituted RMR to further the efficiency of the Nation's overall transportation system by incorporation of the maritime modes as intermodal partners with the land modes. As the name implies, the project investigated how commercial U.S.-flag vessels could be used to advantage as a complement to highway and railroad transportation providers in the U.S. domestic trade. Two distinct types of domestic shipping are contemplated: short sea shipping and container-on-barge (COB).



...U.S.-flag vessels could be used to advantage as a complement to highway and railroad transportation providers...

Modal Partnership: RMR is not motivated by the type of modal competition which the marine mode gradually began losing when the flange wheel on iron rails spread across the country in the 19th Century and which intensified in the 20th Century with the rubber tire on the paved road. Rather, the forecasts for unprecedented increases in overall transportation demand signal a new day of general freight plethora. In the plethora environment, the water modes should be viewed, not as rivals of the land modes, but as

partners--intermodal partners.

Unitized Shipments: The transportation of unitized shipments (containers and/or truck trailers) between U.S. city-ports located on either the inland waterways or coastal sea-lanes most accurately should be compared to railroad piggyback service. In the services envisioned by RMR, the marine carriers' customers would be originating or final land carriers, not the shippers or consignees of the freight. Stated otherwise, the marine carrier would normally be the middle partner with one or more land carriers serving the origin and the destination. Several types of unitized freight are easily identified as being ideal for domestic waterborne carriage. To name a few:

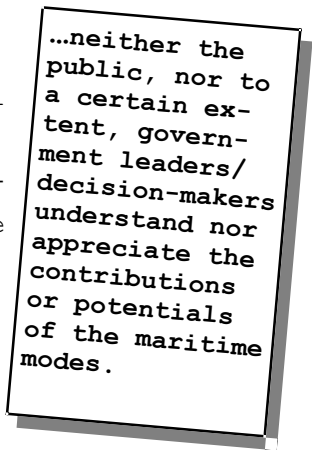
- empty containers and/or trailers which are being repositioned
- very heavy loads which would be illegal or damaging to highways
- hazardous cargoes which would be better off the highways
- "warehouse-in-transit" cargoes freight for which frequent delivery reliability is more essential than transit speed.

After the briefings, all RMR participants were asked to name what assets their sub-region possessed that would be of benefit to an all-mode intermodal transportation system in the new era of freight plethora. Discussion and consensus building were followed by similar procedures to determine what liabilities were present and which would be detrimental to the establishment of domestic waterborne shipping systems. This set the stage for the final portion: What is needed to establish a fully intermodal transportation system and how can these needs be met?

The main body of this report does not attempt to digest all of the valuable information that was contributed; however, much of it is incorporated in various appendices. This report focuses on three ubiquitous observations that form the basis of the conclusions and subsequent recommendations.

NEED FOR MARITIME RECOGNITION

Industry principals feel that neither the public, nor to a certain extent, government leaders/decision-makers understand nor appreciate the contributions or potentials of the maritime modes. The participants opined that this liability would be a substantial impediment to maritime participation in the 2x3x challenge.



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This viewpoint included the Federal level and was seen mostly as a lack of overall coordination. The various agencies were cited for what was perceived to be fractured responsibilities. A considerable number of participants felt that a single maritime agency would be beneficial; however, this was not a consensus.

The lack of recognition viewpoint carried over to the state government level. The participants understood that, while the state departments of transportation (SDOT) have experienced a relatively recent metamorphosis from highway bureaus, the transition is not automatic. It was readily acknowledged that the major mandate of the SDOTs remains that of road building and maintenance. There was considerable discussion about the various methods that the individual SDOTs use to meet their non-highway responsibilities.

At the local government and Metropolitan Planning Organization (MPO) level the integration of multimodal and intermodal transportation planning is even less evident. While some MPO's have recently begun to recognize the impact of goods movement on the overall transportation system effectiveness, many others have not. Since most deepwater ports and many inland ports are located in urbanized areas, the recognition of intermodal solutions to congestion problems must receive wider attention. Fortunately, the visibility of freight and its impact on the nation's landside networks are on the rise at all levels. This is evidenced by the following: the Latin American Trade and Transportation Study, the National Freight Study (being conducted by the Federal Highway Administration), and the increased number of Transportation Research Board and American Association of State Highway and Transportation Officials committees looking at various freight issues.

The RMR participants did not spare themselves. They conceded that traditionally, the maritime professionals have fostered a distinct culture that now impedes reciprocal understanding.

Lack of recognition by the public and by consumers was also cited. It was understood that consumers are completely indifferent as to what mode is used as long as freight deliveries are dependable and economical. The RMR

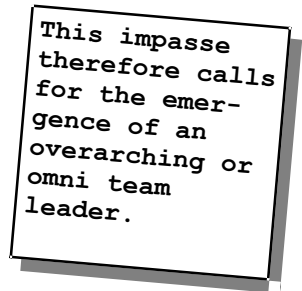
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participants pointed out that the other modes were far more visible to the public than ships, towboats, and barges. Thus, to the degree that citizens and their representatives tend to support one mode over another, lack of visibility is a maritime liability.

NEED FOR CREATIVE LEADERSHIP

The increased use of the water mode is virtually inescapable due to the growing demands of 2x3x on the land-based modes. This inevitability can be seen in today's increased interest in waterborne domestic shipping. The question is how to integrate the water mode in an orderly, and therefore effective, way. Without overarching leadership, at best, advocates of fully partnered intermodalism will be mere theoreticians. At worst, disorderly, inefficient intermodalism will emerge as a matter of necessity as a result of near gridlock. The primary key to achieving orderly, highly effective intermodalism, according to a majority of the RMR participants, will be an emergence of creative leadership. This should not be construed as a negative criticism of current or past leadership on any level. Rather it is consistent with the observation noted above about lack of maritime recognition. In a constructive context, the RMR participants recognized that modal specialization is all-pervasive in today's transportation culture. This contributes to an overall lack of transportation knowledge breadth. The gap between modal experts is a liability to rationalized multi-modal operations.

In essence, these maritime experts conceded that they did not know how to be fully effective in assisting truck and/or rail carriers. However, implicit in this admission was the conclusion that their land mode counterparts are equally unprepared to take full advantage of the maritime mode as a transportation partner. This impasse therefore calls for the emergence of an overarching or omni team leader.



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This new leadership must synthesize both the overall needs and the individual modal capabilities into a collaborative system. At minimum, the collaborators must include the heads of the appropriate Federal modal agencies with guidance and direction from the Secretarial level. Equally essential, the new leadership must include the heads of the respective state departments of transportation. Leaders of the port authority industry, most of whom are employees of the states, counties, cities, or navigation dis-

tricts, will provide the needed congruity. As indicated above, the MPO's must also be represented. Last but by no means least, the leaders of the transportation private industries must be included.

Overarching leadership will be able to appreciate all modes with bias toward none. It must view "factions" as "fractions" that can be united into one intermodal whole whose effectiveness is far greater than the sum of the parts. The task of the leadership would be to mold a team that would take intermodalism to its next logical plateau: Today's approach of conducting a succession of specialized procedures should be transformed into a collective lateral process that best utilizes the inherent advantages of each mode.

In effect, the RMR participants did not claim that the present systems are leaderless, but what they asked was that the new partnership be "leaderful."

NEED FOR INNOVATIVE FUNDING IN GENERAL

In some respects, the funding needed to implement domestic shipping on the Gulf or on the southern waterways will be fairly minimal; however, in other respects it will be considerable; in the net, it will be substantial. Compared to other alternatives, it will be a bargain, but it will not be free. Financing will pose a problem for governments and private industries, not because the levels are insurmountable, but because the new paradigm requires innovation and new thinking in funding methods.

The RMR participants considered the current methods of private and public financing inadequate for the tasks of establishing efficient, economical, systemic short sea waterborne service. This is also true of container-on-barge service, but perhaps to a lesser extent. Innovative financing combined with current conventional and governmental assistance will be required. Because there are many variations, it is impractical to describe in detail the many types of vessels that conceptually can be used in the domestic trade. Although most already exist, some are only on drawing boards. Since the types of vessels determine the types of terminals, a basic notional description of a short sea shipping system and a container-on-barge system follows.

Short Sea Domestic Shipping System Factors

The "highways" to be utilized are the sea-lanes of the Gulf of Mexico. Obviously, these are available at reasonable cost to responsible operators. The "roads and streets" are the connecting channels. Essentially, the short sea system would not need any channel improvements. The availability of these assets with significant excess capacity, coupled with the system's economical and ecological advantages, are the paramount reasons for advocating maritime intermodalism as a logical partner to land-based transportation. Such use is in keeping with the injunction of doing the most with existing assets.

The terminals should not present a major financial obstacle to establishing domestic short sea systems. Because the conceived systems will only handle unitized freight, i.e., trailers and/or containers, domestic roll-on/roll-off terminals can be less elaborate than most conventional ocean marine terminals. In many cases, otherwise obsolete terminals can be converted. The major cost would then be the removal of warehouses and buildings and the creation of open storage space, plus some added costs associated with roll-on/roll-off operations.



Photograph Courtesy of Foss Maritime Company

THE MV *DELTA MARINER* A U.S.-FLAG, SHORT SEA VESSEL

The success of a short sea system will be contingent upon reliability, cost, and overall transit time. The big investment will center mostly on the ships that would be needed. It will be absolutely necessary to have frequent, scheduled departures and arrivals, and this translates into a fleet of sufficient size to assure that the overall transit time compares favorably with the conventional modes.

The number of ships depends upon numerous, obvious factors, e.g., the length of the run, speed of the ships, and the required service frequency.

Most likely, the vessels in short sea service would be roll on/roll off ships.

Purchase of self-propelled, conventional, ferry-type vessels would constitute the smallest initial investment. Conventional sea-going barges pulled by conventional sea-going tugs may be unacceptably slow for systemic short sea use; however, an integrated or articulated vessel system (a barge and tug constructed so that they fit together and thereby form virtually one vessel) should not be overlooked. Under such a system, barges could be in port always ready for loading, and the tug units would enter port, change barges and proceed out with no delays attributable to cargo handling. These systems would have a higher initial cost, but could prove more economical overall.

Riverine Container-on-barge Shipping System Factors

The waterways of the Gulf South, the systems of the Mississippi River, Tennessee-Tombigbee Waterway, and the Gulf Intracoastal Waterway are heavily utilized



Photograph Courtesy of Osprey Line

AN INLAND BARGE MOVEMENT OF CONTAINERS

for weighty, voluminous bulk freight. As with the short sea system, the availability of these riverine assets (which are not near capacity), coupled with the system's economical and ecological advantages are the paramount reason for advocating maritime intermodalism.

River terminals do not present a major financial obstacle to increased container-on-barge operations. However, there are some major differences between terminals of the short sea trade and those of inland container-on-barge terminals. Currently, shallow draft movements have handled only containers, not trailers, making crantage necessary. This is not to say that roll-on/roll-off container and trailer operations should not be considered in the future, but for immediate planning purposes, only freight containers are contemplated. In any case, the inland COB terminal can be less elaborate than high-volume international container terminals at deepwater ports. Both types of terminals have common prerequisites for open storage space, crantage and container handling equipment.

COB operations can function with modified conventional barges and conventional towboats. Until such time as specially designed COB equipment is required, it can be presumed that the needed vessels can be obtained and modified from the existing stock of U.S.-flag towboats and barges.

As with short sea service, the number of barges and towboats must be adequate to meet the shippers' schedules. It is noteworthy that in the past, lower tariffs were expected to be a powerful incentive for COB shippers. Price was supposed to offset slower transit times. However, these ventures in mid-America failed. Arguably, a failure cycle was created when reliability was frustrated by inadequate frequency of service which, in turn, diminished volumes. Today's COB operators find that they can compete on service. Even though it moves slower, a timely delivery of one barge load of containers can work out to be algebraically time-competitive with a drawn out series of truck deliveries. As with short sea service, an expanded COB market will require an adequate number of vessels to maintain a viable schedule.

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Proscribed Funding Concepts

It is far beyond the scope of *Project Where the Rudders Meet the Roads* to recommend what form innovative financing should take. It is enough to opine that new means of financing will be needed or the systems will not be created in sufficient time to prove effective with the 2x3x onslaught. However there are concepts that RMR participants feel should not be considered.

There was little sentiment to weaken the Jones Act provisions. To the extent that such sentiment was expressed, it was more of a manifestation of frustration at being unable to buy a vessel at a price that could be competitively employed. It was hoped that some alternative could be found to achieve the real objective: a less expensive, competitive U.S.-flag vessel in the domestic short sea trade.

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There was no sentiment to divert Federal funding from dedicated highways or railroads to maritime missions. The sentiment was that if maritime intermodalism is important, it must stand financially on its own.

There was no sentiment expressed for direct subsidy.

Build and Charter Program

One innovative funding suggestion is that the Federal government should, in cooperation with the industry, design the prototype vessel(s) that would be needed to establish the needed domestic trades. The economics of scale would thus come into play. Charters would then be fixed and the vessels would be built. The vessels could also be sold, if that was preferable to the parties. It should be noted that the United States is quite competitive as a ship builder of smaller vessels such as those under consideration.

National Considerations

The government's maritime intermodal efforts should encompass all regions that face potentially severe congestion on the land modes and have the physical attributes to establish ameliorative short sea shipping and/or container-on-barge services. Specifically, cooperative efforts for short sea operations among all coasts and for COB operations on the whole Mississippi system should be encouraged. The GRIP region can contribute to and benefit from any national maritime intermodal effort. Some other regions may face more serious congestion now or in the near future, but the GRIP states have collectively more maritime assets than any other region. A broad multi-regional approach would energize the economies of scale and would best utilize GRIP regional expertise in national planning.

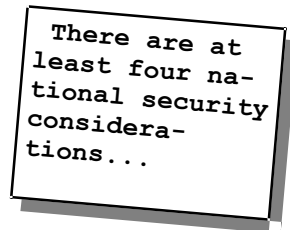


Photograph Courtesy of Osprey Line

A MOVEMENT OF MILITARY ROLLING EQUIPMENT

National Security Considerations

There are at least four national security considerations that should be noted. First, a domestic shipping system will be a powerful asset when mobilizations and/or deployments are necessary. Experience teaches that the military must initially move large amounts of materiel to U.S. ports. These movements are appropriately called "surges." They are superimposed upon normal commercial traffic. In Operation Desert Shield/Storm, surge movements created some congestion, but it was manageable. However, the same surge superimposed upon tomorrow's 2x3x traffic would choke the system to the detriment of both commercial and military shippers. Therefore, having a maritime complement to rail and highway transportation could be the difference between a successful or a failed deployment.



There are at least four national security considerations...

The contemplated domestic waterborne systems will employ skilled seamen and officers in new billets. As such, they would comprise a much-needed addition to the reserve manpower supply. Again, we draw upon the Desert War experience where 95 percent of the cargoes moved by ship. The supply of mariners during that conflict was stretched. Arguably, the supply may not have been adequate for a longer sustained conflict. In a future conflict, the manpower pool would be enlarged if it included robust domestic shipping industries. In addition, it would be possible to move vessels normally engaged in domestic trade into overseas military operations. In the Second World War, the U.S.-flag intercoastal and short sea fleets provided a substantial proportion of the vessels called into wartime service.

Terrorism is another consideration. Clearly the transportation infrastructure is a prime target. Unfortunately, there are countless ways that terrorists could impede traffic for long periods of time, causing economic and security distress. If, for example, a series of bridges were destroyed by terrorists, the availability of maritime assets would be imperative. Recalling New York on 9/11, ferryboats, tour boats, and tugboats were all pressed into service when the conventional transportation services were severed.

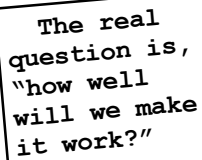
Finally, the need generated by these initiatives for U.S.-flag ships built in American shipyards will sustain the vitally needed defense industry.

NAFTA and Latin American Implications

This RMR report dwells upon domestic commerce; i.e., freight movements from one point in the United States to another in the United States. However, the position of the U.S. Gulf of Mexico is particularly advantageous for Latin American traffic. The compatibility of Gulf domestic shipping networks married to short sea trade routes with the Caribbean and Central America offer special advantages. The U.S. Gulf ports, particularly the eastern ones, have advantageous positions for trans-Gulf, short sea commerce with Mexico. Tampa is the closest U.S. port to Havana. All Gulf ports are logical trading partners with the Caribbean and Latin American nations. The West Gulf ports offer special advantages with their proximity to the Mexican border and the Gulf Intracoastal Waterway. Thus while the contemplated domestic shipping systems are important concepts to ally with the other modes and meet the 2x3x challenge for internal U.S. commerce, the compatibility of such domestic systems with the present and future Latin American trade routes is a most conspicuous side benefit and opportunity.

Cautions

Carrying containers on inland barges or trailers on coastwise ships is anything but a new idea. Since no one apparently has kept a record of the number of times that such ventures have failed in the past decades, it can be said that they have been tried countless times. There have been some successes, most notably in Europe and the Pacific Northwest. Notwithstanding these few, many experienced maritime executives have understandable prejudices about the efficacy of container-on-barge or coastwise shipping. "It's been tried. It won't



The real question is, "how well will we make it work?"

work," they proclaim with excellent hindsight. Obviously, it does work-but only under the right circumstances. The projected difference between conventional transportation capacity and future demand introduces a new variable that virtually guarantees that it *must* work. The real question is, "how well will we make it work?" For those who advocate just letting it happen with minimum coordination, some hindsight into the modern port system may be useful.

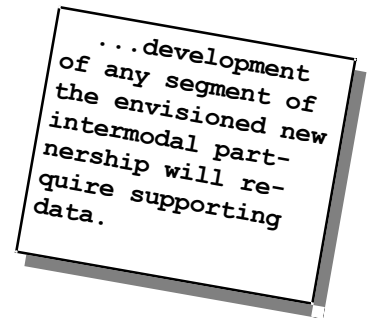
Today, the ubiquitousness of port authorities is taken for granted, but, based upon the history of maritime affairs, such organizations are relatively quite new. In the United States the first port authorities were created on the West Coast as a result of the Gold Rush and the subsequent rapid development when demand for marine terminals had far exceeded the capacity (a 19th century 2x3x). Waterfront operators rushed to fill the gap but the end result was shoddy, unsafe terminals, as well as inefficiency, congestion, and disorder. To counter these ills, port authorities were created, bringing about the professionalism, order, and planning we take for granted today.

From the above, two caveats can be identified: First, it follows that planning and orderly development for domestic short-sea shipping and container-on-barge will best serve the nation and the industries. Disjointed development will produce mistakes and redundancies that will ultimately require replacements. Second, any premature experiments in setting up new systems that result in failure will harden the prejudice that exists against waterborne domestic shipping.

It can be noted that in the year 2000 many GRIP members favored sponsorship of and co-funding for a study, appropriately named Plethora. It would have provided a planning tool to accurately define the challenges and prescribe the solutions. The proposed study would have examined in five-year increments the capacities of the land transportation system and the transportation demand. The excess demand presumably would translate into the freight that should be

moved intermodally utilizing the maritime mode for the main haul. The proposed study floundered when the anticipated Federal funding mechanism did not materialize and a consensus could not be reached among the states.

Notwithstanding this setback, specific development of any segment of the envisioned new intermodal partnership will require supporting data. The 2x3x prediction/process is, at best, a generalization. Knowing the timeframes of infrastructure capacity and market demand is essential to rational development.



...development of any segment of the envisioned new intermodal partnership will require supporting data.

**PLAN OF ACTION FOR
CONSENSUS BUILDING FOR INTERMODAL NETWORK EFFICIENCY
(ConBINE)**

Long-term Objective

The long-range objective is the establishment of one or more regional Federal/state/industry partnerships capable of interlocking the various levels and branches of government and industry to create a land/marine intermodal system that benefits all parties in view of the freight plethora created by the 2x3x factor.

Short-term Objective

As a provisional step, the *Consensus Building for Intermodal Network Entities (ConBINE)* process is carried out in regions (of two or more states) which enjoy potential maritime intermodal benefits to determine (1) if and when maritime intermodalism will be needed to ameliorate congestion and (2) if so, what will the logical roles and responsibilities of the Federal, state and local governments, port authorities, and private sector entities be.

Long-term Benefits

The long-term benefit must be the efficient utilization of an existing but underemployed transportation asset, the maritime sector, as a partner with the existing domestic, land transportation modes, thereby enhancing the reliability, efficiency, and ecological status of the overall transportation system.

National security would also benefit by (1) increasing the size of the U.S. Merchant Marine fleet and the mariner work force; (2) minimizing the potential for congestion in a national emergency mobilization when military surge freight volumes will be superimposed upon an overall transportation system at or near capacity with conventional freight volumes; (3) having a viable alternative in the event of terrorist-caused land mode disruptions; and (4) sustaining the defense-critical U.S. shipbuilding industry.

In order for the maritime mode to carry a meaningful amount of domestic cargo, there must be agreements and understanding among diverse parties. Thus there will be a need for agreements among beneficiaries ranging from Federal/states compacts to less formal understandings. ConBINEs can establish the rationality of such agreements in an orderly, timely manner.

Short-term Benefits

ConBINE allows for intermodal plans to be drawn up for appropriate geographical areas utilizing the indigenous expertise and focused upon the local needs while providing an eventual means of combining the efforts into a national network.

Steps

1. Initiating Organization
 - develop ConBINE guidance for participants
 - offer participation to nucleus states
 - determine type of domestic system (e.g., COB or coastwise)
 - Form ConBINEs
 - leaders selected
 - goals and geographical scope set
2. ConBINE Meetings
 - recommendations received and analyzed
 - implementation policies established
 - national assistance determined
 - feasibility assistance?
 - terminal conversion loans?
 - connector assurances?
 - trust immunity?
 - others?
3. Implementation
 - compacts or agreements signed
 - multi-state water carrier available
 - routes established
 - terminals established
 - vessels acquired
 - Service begins

**PLAN OF ACTION FOR
DOMESTIC AFFORDABLE VESSEL EFFORT
(DAVE)**

Objective

In view of the substantially larger volumes of freight generated by 2x3x, the objective is the determination of one or more means by which the domestically operated vessels needed can be acquired and profitably amortized by United States citizens in conformity with current U.S. laws.

Background

In order to be operated in the U.S. domestic trade, a vessel must be built in the United States. It is widely perceived that the purchase price of such a U.S.-built vessel is and will be a fatal financial impediment for American-flag water carriers. There are compelling national security and economic motivations which make repeal of the requirements unacceptable. The result is an apparent impasse.

Benefit

DAVE will explore alternatives within the existing legal frameworks and without recourse to direct subsidy. DAVE would create an opportunity for government and private sector executives to "think outside the box" and thereby hopefully resolve the impasse.

Steps

1. Submission and Endorsement
 - endorsement by the Maritime Administrator and forwarding to the Department
 - endorsement by the Department
2. Initiating Organization
 - development DAVE guidance for participants
 - formation of DAVE ad hoc group formed
- 3 National DAVE Meetings
 - recommendations received and analyzed
 - implementation policies established
 - national assistance determined

TERMS and ACRONYMS APPLICABLE TO THIS REPORT

2X3X Factor	a doubling to tripling in 20 to 25 years of the demand for overall U.S. freight transportation services that has been in process since the mid 1990s in most modes and trades
blue water	oceans and seas
brown water	rivers and inland waterways
COB	container on barge
ConBINE	Consensus Building for Intermodal Network
deep water	term used to denote capability of operation on the Atlantic or Pacific oceans, the Gulf of Mexico, and the Great Lakes; i.e. deep water. While not definitive, deep navigational water depth is generally considered to be at least 25 feet deep
domestic trade	trade between two points in a nation, as opposed to foreign trade
general cargo	Freight that can be quantified by number of pieces, in contrast with bulk freight that is quantified only by weight or volume
GRIP	Gulf\Rivers Intermodal Partnership (a coalition of the Federal, state, and local transportation officials and industry executives from states of Alabama, Arkansas, western Florida, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas)
intermodal	The transport of goods from origin to destination utilizing programmed technology for the carriage and transfer between two or more modes to achieve maximum overall efficiency
RMR	<i>Project Where the Rudders Meet the Roads</i>
SDOT	State departments of transportation
shallow water	Term used to denote operations on the rivers and waterways; i.e., shallow water. While not definitive, shallow navigational water depth is generally considered to be at least eight feet deep.
Short sea	Sea commerce between ports that are relatively close to one another, generally utilizing smaller, specialized vessels
unitized cargo	General cargo carried in a unit, as in containers or trailers (and in some cases, on pallets)
vessel	An all-inclusive term covering all types of crafts used to travel on water. For example, inland barges, towboats, and ships are all vessels.

**WHERE THE RUDDERS MEET THE ROADS
SUB-REGIONAL MEETINGS**

GRIP TENN-TOM SUB-REGION

9/27/01

MEETING FEEDBACK

LEGEND: NUMBERED = CONSIDERED HIGHEST PRIORITY
 BULLETED (dot) = OTHER IDENTIFIED ITEMS

ASSETS

1. Inland Waterway System offers greatest capacity for meeting transportation demands and economic development (particularly rural)
 2. Capacity available for domestic/international container movement
 3. Waterways offer highest potential for reducing highway congestion; and infrastructure, maintenance, and construction costs of highways
 4. Environmental benefits of waterway transportation proven by studies
 5. Ocean port connectivity to inland ports
- Expand/improve excellent lock system

LIABILITIES

1. Lack of funds for infrastructure-e.g., replacement of some locks
 2. Lack of recognition and knowledge of inland waterways (Tonnage criteria is misleading-suggest economic value)
 3. No port improvement funding source
 4. Bottlenecks on rail and highway modes
 5. Creation of new infrastructure takes too long
- Rural and depressed region
 - Volume insufficiencies hamper increased use

NEEDS

Funding for: creating jobs
 varied cargoes
 containers
 backlogged maintenance
 capital improvements
 port infrastructure improvements-(key to improved waterway utilization)

Funding: Innovative
 Incentives for modes to work together

TENN-TOM (Continued)

Proponents in Congress:

Stronger Federal Role

Study funded on impediments to container shipments
and breakbulk constraints

Comprehensive Intermodalism Legislation

Inland/Ocean Ports Partnership

RESOURCES

Governors—Champions

Chamber of Commerce

Congress

EDA, State Economic Development Agency

Federal DOT, State DOTs

Incentives—policy, tax

Industry

Regional Commissions

Targeted Financing—earmark

Trust Fund Surplus

WHERE THE RUDDERS MEET THE ROADS
SUB-REGIONAL MEETINGS

GRIP WEST GULF SUB-REGION

10/24/01

MEETING FEEDBACK

LEGEND: NUMBERED = CONSIDERED HIGHEST PRIORITY
 BULLETED (dot) = OTHER IDENTIFIED ITEMS

ASSETS

1. Existing Container Flows; cargo waiting for maritime option
 2. Excellent Port facilities including intermodal access (e.g., Gulf Intra-coastal Waterway) in proximity to deep water
 3. Air Quality Attainment (Environmental Rules)
 4. Proximity to Mexico (Twin Plants)
 5. Port Capacity Available
- I-35 Congestion
 - Alternative to handle NAFTA flows (remove from congested highways)
 - Willing to improve paradigm

LIABILITIES

1. Perception - including ports under-utilized
 2. Environmental - both perceived and actual
- modal cost disadvantage
 - few production facilities (freight generators)
 - perception of Houston as prime
 - perceived expensive cargo handling
 - I-69 potential to misroute
 - Competition for waterway funds
 - Time disadvantage

NEEDS

1. Educate, Promote Awareness, Market waterway mode system
2. Additional funds - e.g., USACE for GIWW
 e.g., FHWA for non-highway projects
 e.g., state match
 e.g., internships (DOT program)
3. Multi-modal freight-friendly infrastructure

WEST GULF (Continued)

1. Incentives to move freight on water - including legislation

A) Modern Container Handling Facility and Equipment
Storage Capacity - Barge Economic Order Quantity
Long Term Capital

Route I-69 for freight

Supplement to Houston

System Maintenance

RESOURCES

EDUCATION: Congress
Secretary of Transportation
MARAD
State DOTs

MPO's

Funding - Title XI for Ports

**WHERE THE RUDDERS MEET THE ROADS
SUB-REGIONAL MEETINGS**

GRIP EAST GULF SUB-REGION

11/28/01

MEETING FEEDBACK

LEGEND:	NUMBERED	= CONSIDERED HIGHEST PRIORITY
	BULLETED (dot)	= OTHER IDENTIFIED ITEMS

ASSETS

1. Gulf Coast deep draft ports—connections to inland waterway system.
Multi-modal nature of gulf ports (hwy, rail, water, air)
2. Proximity to Cuba, Latin America, and the Caribbean—Trans-gulf shipping services (short sea)
3. Ports have land available for facilities
4. Ports taking foreign trade—(combining with) domestic trade network
5. Tourism—cruise ship business

LIABILITIES

1. No coordinating authority/plan to develop coastwise shipping
2. Intermodal north/south infrastructure
3. Nature of cargo: hi volume/low \$ with unbalanced north/south trade
- 4A. Environmental constraints
- 4B. Public is not aware of the benefits/need of freight transport

NEEDS

- Coordinated regional intermodal freight policy and plan (steer the system)
- Region intermodal freight plan
- Future system description and priority
- Region planning and coordination—\$ and land (expansion)
- Transport plan policy—Gulf region
- Permitting—user friendly process
- Improved forum—inclusive

EAST GULF (Continued)

- Get out word—freight **does** vote
- Get out word—environmental advantages of water transportation system

RESOURCES

- DOT
- MARAD
- State DOT
- SEA-21 Federal Funding
- Recycling—i.e., Brownfields
- State economical development—e.g., bonds, state intermodal bank
- Private sector--\$; obtain permits; help develop plan

WHERE THE RUDDERS MEET THE ROADS

SUB-REGIONAL MEETINGS

GRIP LOWER MISSISSIPPI SUB-REGION 12/14/01 MEETING FEEDBACK

LEGEND:	NUMBERED	= CONSIDERED HIGHEST PRIORITY
	BULLETED (dot)	= OTHER IDENTIFIED ITEMS

ASSETS (Numbered Items Prioritized)

1. Location to major domestic market for coalition
 2. Infrastructure
 3. Labor force/supply at "reasonable" wages-and stable
- Commodities
 - Customer base already exists to support at a least a startup of multi-modal
 - Container on barge in the Natchez area to ship the container to Asia by rail from Houston
 - The river parallels one of the NAFTA corridors which has already been determined by the US/DOT - I-35
 - Mississippi has a four lane highway system, not operating at capacity, which can support expanded port usage
 - Capability of implementing 12 foot navigational channel between Baton Rouge and Cairo, Illinois
 - Bulk commodities produced within region could be containerized
 - Rail and Highway
 - Inland waterways offer an elasticity not available in other modes
 - Networking of the people in the region
 - Inland ports are connected and work with the coastal ports in order to move freight
 - This part of the country is a prime position to set up and work an east/west rail distribution from north/south trunk
 - Excellent existing water traffic patterns and adequate number of carriers

LIABILITIES (Numbered Items Prioritized)

1. No comprehensive plan for intermodal system
 2. Lack of sufficient infrastructure funding
 3. Difficult expandability of ports/environmental process
- Dominant position now held by rail and truck
 - Pilotage problems
 - Lack of intermodal access available including rural areas
 - Labor force--lack of technical expertise
 - Lack of regional communication and coordination in maritime community

LOWER MISSISSIPPI (Continued)

- Weight limitations are not compatible between short-line and main-line railroads or on highways of various states
- Short line railroads--weight limit capacity--315k
- Inadequate rail service

NEEDS (Numbered Items Prioritized)

1. Develop comprehensive regional intermodal system plans e.g., landside access and marketing/education
 2. Identifiable source of infrastructure funding for all forms/types intermodal connections
 3. Streamline environmental process
 4. Central funding/coordinating system for intermodal development
- Comprehensive regional program to address landside access problems--rail and highway funds for port infrastructure and access facilities
 - Public education of entire maritime industry
 - Multi-lingual outreach
 - More customers base
 - Upgrade inland ports to handle waterborne container movement
 - Educate shippers, legislators, and general public on advantages of maritime included intermodal system
 - Satisfy the no. 1 and no. 2 liability national/regional intermodal plan, by corridor

**WHERE THE RUDDERS MEET THE ROADS
SUB-REGIONAL MEETINGS**

GRIP MID-GULF SUB-REGION 1/11/02 MEETING FEEDBACK

LEGEND:	NUMBERED	= CONSIDERED HIGHEST PRIORITY
	BULLETED (dot)	= OTHER IDENTIFIED ITEMS

ASSETS

No. 1 ASSET: Natural Resources

1. The Mississippi River, Gulf Outlet, GIWW, and the Gulf of Mexico as unique assets in a sub-region

No. 2 ASSET: Basic Infrastructure Already Exists

1. Basic infrastructure already exists
2. Good market
3. Terminals, roads, rail
4. Land available for development

No. 3 ASSET: Good Labor/Personnel

1. Expertise in the Maritime industry
2. Excellent academic institutions-partnership with industry/study consults
3. Shipping, maritime expertise in large quantity--organizations and individuals
4. Existing human "know-how" in sufficient number(s)

Good I Connect-Rail

1. Yard capacity at ports for empty & containerized cargo storage

Good I Connect--Rail & Highway

1. Potential to build in/out new rail lines in partnership w/ports to expand capacity to move by rail
2. Numerous rail and interchange switching locations along the Mississippi River with the potential to expedite containers to and from barge.
3. Improvement needed in rail service component serving inland ports

MID-GULF (Continued)

Inland/Ocean Partnership Potential

1. Combined with the inland intra coastal system two coastal gulf transportation shuttle system could be coordinated between inland ports and coastal ports
2. Waterways--both shallow and deep draft

Other

1. More/better utilization of container cargo movements (regional--barge vs. truck)
2. There is existing "political will" to engage the issues
3. Huge amount of oil patch cargo travels by truck but could be barge shuttled system if a routine call were established.

LIABILITY

Lack of I and Connection

1. Aged locks and dams on inland waterway system
2. Need to improve locks on the Intercoastal Waterway--major bottleneck--major costs for improvements.
3. Existing highways
4. Outmoded intermodal connections rail/highway
5. Lack of connectivity between existing infrastructure
6. Infrastructure
7. Dredging and channel maintenance

Fund for Expansion

1. Feds lacking "corridor" perspective--what strategic investments should be made along the MS River, GIWW?
2. Access to capital for infrastructure
3. Limited amounts of funds for development of port facilities

Environmental Constraints

1. New environmental permits
2. Coastal land loss
3. Swamp/wetlands create construction challenges
4. MID-GULF (Continued)
5. Environmental pollution
6. Environmental restrictions

MID-GULF (Continued)

Lack of Public and/or Shipper Recognition

1. Lack of understanding of policy makers & legislative leadership for the need for investment
2. Public/private inertia to change

Lack of I Connects-Rail

1. Lack of connectivity of existing infrastructure
2. Pressure by real estate development to add at-grade highway-rail crossings which reduces rail efficiency

Lack of I Connects-Highway

1. Lack of connectivity of existing infrastructure

Pilotage

1. Expensive pilotage

Too Many Agencies

1. No central authority in Louisiana. Six deep draft ports, eighteen shallow draft ports

Markets

1. Inadequate or insufficient market(s)

Other

- 1 Politics, i.e., Louisiana business climate
- 2 Historically parochial thinking--competition instead of collaboration
- 3 Timeframe vs. cut-off times
- 4 Rail company-acquiring carriers
- 5 Fear of business loss from mode to mode and competition within same modes for business
- 6 Aged rail and highway bridges interfere and constricting inland waterway commerce
- 7 Different views of investor risk in water transportation due to lack of understanding

MID-GULF (Continued)

NEEDS

☐ *Funding No. 1*

1. Funding--new more flexible requirements--perhaps establish LA revolving land fund for freight
2. Increase funding through increase public & political awareness
3. Funds to build additional port facilities, I.e., docks, warehousing, roads, rail, utilities
4. Need to improve aging infrastructure--dedicated funding
5. Federal investment (Funds)
6. !!!Money!!!
7. Adequate funding to improve infrastructure needs/access
8. Need Federal funding sources that is independent of mode. Could be used on any infrastructure88

☐ *Institutional No. 2*

1. Increase government dialogue with private sector so that funding is available
2. Government & industry leadership to make the system (assets) work!
3. Broader understanding of the benefits & opportunities available through increased reliance on waterborne commerce
4. Need better work program & research agenda
5. Public policy incentives to utilize water transportation in lieu of highway and rail
6. Industry and political leadership to maximize assets

☐ *Intermodal*

1. Extend connect rail & highway to lower Mississippi River
2. More efficient (specialized) rail and highway to ports/vessel Intermodal connectivity

☐ *Safety*

1. No net increase of at grade-crossings--need federal rule

**Where the Rudders Meet the Roads
Common/Considered Common Assets, Liabilities, and Needs**

The following is a list of assets, liabilities, and needs deemed either *common* or *considered common* by participants of the five sub-regional meetings held by the Central Region's Gulf/Rivers Intermodal Partnership from October 2001 to January 2002:

COMMON ASSETS

1. The GRIP region's excellent port facilities including intermodal access (e.g., Gulf Intracoastal Waterway) in proximity to deep water
2. Gulf Coast deep draft ports—connections to inland waterway port system. Multi-modal nature of gulf ports (highway, rail, water, air)
3. The GRIP Region's numerous rail and interchange switching locations along the Mississippi River with the potential to expedite containers to and from barge.

COMMON LIABILITIES

1. No coordinating leadership/comprehensive plan for an intermodal system
2. Lack of sufficient infrastructure and infrastructure funding
3. Lack of public and/or shipper recognition
4. Inadequate or insufficient markets
5. Environmental constraints

COMMON NEEDS

1. Government and industry leading in partnership
2. Funding is needed for: creation of jobs, variation in cargo, containers, backlogged maintenance, capital improvements, port infrastructure improvements—key to improved waterway utilization.
3. Additional funding is needed for: the US Army Corps of Engineers for the Gulf Intracoastal Waterway; the US DOT Federal Highway Administration for non-highway projects; state match; and internships (DOT program).
4. Develop comprehensive regional intermodal system plans e.g., landside access and marketing/education

CONSIDERED COMMON ASSETS

1. Capacity available for domestic/international container movement
2. Environmental benefits of waterway transportation proven by studies
3. Air quality attainment (Environmental rules)
4. Proximity to Mexico
5. Port Capacity Available
6. Alternative to handle NAFTA flows (remove from congested highways)
7. Proximity to Cuba, Latin America, and the Caribbean—trans-Gulf shipping services (short sea)
8. Ports have land available for facilities
9. Location to major domestic market for coalition

10. Infrastructure in place
11. The Mississippi River, Gulf Outlet, GIWW, and the Gulf of Mexico as unique assets in a sub-region
Basic infrastructure already exists
12. Good market
13. Land available for development
14. Yard capacity at ports for empty & containerized cargo storage
15. Potential to build in/out new rail lines in partnership w/ports to expand capacity to move by rail

CONSIDERED COMMON LIABILITIES

1. Lack of funds for infrastructure-e.g., replacement of some locks
2. Lack of recognition and knowledge of inland waterways (Tonnage criteria is misleading--suggest economic value)
3. Bottlenecks on rail and highway modes
4. Perception - including ports under-utilized
5. Environmental - both perceived and actual
6. I-69 potential to misroute
7. Competition for waterway funds
8. Intermodal north/south infrastructure
9. Public is not aware of the benefits/need of freight transport
10. Difficult expandability of ports/environmental process
11. Lack of intermodal access available including rural areas
12. Lack of connectivity between existing infrastructure
13. lacking perspective--strategic investments
14. Different views of investor risk in water transportation due to lack of understanding

CONSIDERED COMMON NEEDS

1. Education, promote awareness
2. Incentives to move freight on water
3. Coordinated regional intermodal freight policy and plan (steer the system)
4. Region intermodal freight plan
5. Transport plan policy--Gulf region
6. Get out word--freight **does** vote
7. Get out word--environmental advantages of water transportation system
8. Public education of entire maritime industry
9. Educate shippers, legislators, and general public on advantages of maritime included intermodal system
10. Broader understanding of the benefits & opportunities available through increased reliance on waterborne commerce
11. Need better work program & research agenda
12. Public policy incentive to utilize water transportation in lieu of highway and rail

**WHERE THE RUDDERS MEET THE ROADS
INLAND WATERWAY SYSTEMS
UNIQUE ADVANTAGES**

TENNESSEE-TOMBIGBEE WATERWAY SYSTEM

Alabama-Coosa Rivers: The Alabama-Coosa River basin is part of the extensive Mobile River basin, which also includes the drainage areas of Mobile, Tombigbee and Black Warrior Rivers. Its main streams are the Coosa, Tallapoosa and Alabama Rivers. Total mileage: 305, Project depth: 9 feet, Project width: 200 feet. (Ref. 1)

Black Warrior, Warrior and Tombigbee River System: The Black Warrior-Tombigbee Waterway lies wholly within the State of Alabama and is made up of the Black Warrior, Warrior and Tombigbee Rivers, including the Spisey, Mulberry and Locust Forks of the Black Warrior River. Total mileage: 466, Project depth: 9 feet, Project width: 200 feet. (Ref. 1)

Tennessee-Tombigbee Waterway: The Tennessee-Tombigbee Waterway is a connecting link between established water transportation routes that serve shippers and producers in the South and Midwest as well as deep water ports along the eastern Gulf of Mexico. This unique feature has already benefited commercial interests in 16 states since it opened for business in 1985.

The waterway begins at the northern end at Pickwick Lake on the Tennessee River, flows through northeast Mississippi and west Alabama, and finally connecting with the established Warrior-Tombigbee navigation system at Demopolis, Alabama. From there, commerce travels northward as far as Port Birmingham, Alabama or south to Mobile, Alabama, or other destinations along the Gulf coast. Total mileage: 234; Project depth: 9-12 feet. (Ref. 2)

Although the Tennessee-Tombigbee waterway system has nurtured development, considerable waterfront property remains along the Tennessee-Tombigbee Waterway for future development. This sub-region clearly has capacity available for domestic and international container movement in the primarily rural area.

LOWER MISSISSIPPI RIVER SYSTEM

Arkansas River Navigation System (McClellan-Kerr): The route follows the White River and the Arkansas Post Canal to the Arkansas River, flows up the Arkansas River to the mouth of the Verdigris River to Catoosa, Oklahoma. Total mileage: 448, Project depth: 9 feet, Project width: 150 to 300 feet. (Ref. 1)

Lower Mississippi River: Mississippi River south of Cairo, Illinois, including the Ouachita, Arkansas, Red, Verdigris, White, and Yazoo River. At Baton Rouge, Louisiana, the deep draft ship channel begins. The 700-mile, lock-free main stem of the river system provides for the unparalleled economies of scale of water transportation. The River's ultimate destination is 100 miles south of New Orleans, Louisiana at the mouth of the Passes into the Gulf of Mexico. Total mileage: over 1100.

This sub-region has excellent geographical assets and well-developed infrastructure, and the need for the creation of a comprehensive intermodal plan.

GULF SYSTEM

Gulf Of Mexico: The Gulf of Mexico is the ultimate destination of all inland waterway systems in this report. Each system contributing in varying degrees

to the transport of freight either to or from domestic inland origins and/or destinations. The deep-water ports are ideally located for Gulf domestic coastwise trade and trans-Gulf trade with Mexico, Cuba, Latin America, and the Caribbean.

Gulf Intracoastal Waterway: The Gulf Intracoastal Waterway (GIWW) extends from Apalachee Bay (St. Marks), Florida to Brownsville, Texas. Running parallel to the Gulf of Mexico, it traverses the three Gulf sub-regions, connecting each to the inland waterway systems and to each other for a Gulf alternative in the east/west transport of intermodal freight. Total mileage: 1113, Project depth: 12 feet, Project width: 125 feet. (Ref. 1)

For the purpose of the *Where the Rudders Meet the Roads* report, the Gulf of Mexico was arbitrarily broken down into three sub-regions:

East Gulf: The East Gulf includes the Alabama and Florida panhandles and the western half of the Florida peninsula. The Apalachicola, Chattahoochee and Flint River System, from the bay at Apalachicola, Florida to the confluence of the Chattahoochee and Flint Rivers, the Chattahoochee River to Columbus, Georgia (268 miles), and the Flint River to Bainbridge, Georgia (29 miles), is a source for inland waterway freight transportation in this sub-region. The sub-region emphasized its proximity to Cuba and Latin America as facilitating short-sea trade to connect with the domestic trade.

Mid Gulf: The Mid Gulf extends from Galveston Bay to Mobile Bay. A growing container on barge service operates from Houston both as offshore coastwise (Gulf of Mexico) to New Orleans and as inshore (GIWW) to Lake Charles. In addition to the GIWW, Mississippi River, and Tennessee-Tombigbee Waterway, the sub-region's inland waterway assets include the Houston Ship Channel. The Channel connects Galveston Harbor opposite Port Bolivar with Houston, Texas, extending northwesterly across Galveston Bay through the San Jacinto River and Buffalo Bayou to a turning basin at Houston, Texas. Total mileage: 50, Project depth: 8 to 40 feet, Project width: 60 to 400 feet. (Ref. 1)

The offshore oil support activities centered in the Mid Gulf sub-region provide tremendous demand for transportation services across all modes. Emphasis in this sub-region was placed on the natural resources, infrastructure, and connections, and the lack of public recognition of the need to invest in transportation capacity.

West Gulf: The West Gulf extends from Brownsville, Texas to the immediate west of Galveston Bay. The proximity to Mexico has a huge impact upon the transportation network in this sub-region. Several of the deep-draft ports move international trade shipments with origins or destinations in Mexico. A container on barge service operates out of Houston, Texas that connects with Freeport, Texas.

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1. The American Waterways Operators, Inc., *Big Load Afloat*, Washington, D. C., 1973.
 2. *Waterway Description and Components*, Tennessee Tombigbee Waterway Association. Retrieved July 24, 2002 from <http://www.tenntom.org>.

ENVIRONMENTAL ADVANTAGES OF INLAND BARGE TRANSPORTATION

Inland barges carry approximately 15 percent of the nation's freight at the lowest unit cost while offering an environmentally-sound alternative to other land modes.

Energy Efficiency

The measure of energy efficiency in transportation is the amount of energy used for the service provided, and can be expressed as the number of BTUs required to move one ton of cargo one mile (a-ton-mile). In studies comparing rail, truck, and water, shallow-draft water transportation has been proven to be the most energy efficient method of freight transportation for moving bulk raw materials.

An analysis of rail and waterway fuel efficiency show the average BTUs expended per ton-mile totals 433 for water transport, and 696 for rail transport. It is much more efficient to move cargo through water than over land.

Size is the key to water transport's efficiency. The capacity (1,500 tons) of an inland barge, which can carry five times its own weight, is impressive, and the industry as a whole has enormous capacity. The cargo capacity of a barge is 15 times greater than one rail car and 60 times greater than one semi trailer. To move the same amount of cargo transported by a standard tow (15 barges) would require a freight train 2 3/4 miles long or a line of trucks stretching more than 35 miles. On the lower Mississippi one 10,000-horsepower towboat can push 40 barges that have the carrying capacity of 600 railcars or more than 2,200 trucks.

Cargo Capacities

One barge carries 1,500 tons or 52,500 bushels or 453,600 gallons. One railcar carries 100 tons or 3,500 bushels or 30,240 gallons. One truck carries 25 tons or 875 bushels or 7,560 gallons.

Safety

Transporting cargo safely is an important measure of environmental responsibility, and water transport has very few accidents, fatalities, or injuries.

Shallow-draft water transportation has definite advantages over competitive modes; it generally involves less urban exposure than either truck or rail; operates on a system that has few crossing junctures; and is relatively remote from population centers, all factors that reduce both the number and impact of waterway incidents.

For the amount of tonnage carried, barge spills occur quite infrequently. Barges, because of their much larger capacity, require far fewer units than either rail or truck to move an equivalent amount of cargo, and so the chance of a spill is less likely. Also, design features of barges such as double-hulls and navigational aids help reduce accident frequency. Recent legislation requires all new inland tank barges carrying liquid cargoes to be built with both an inner and outer hull. However, for some time water transport operators have realized the need to protect the environment, and about two thirds of the inland tank barges that have been constructed in the last ten years have either a complete double hull, double sides, or a double bottom.

For any hazardous liquid material shipped by water, the United States Coast Guard maintains a comprehensive list of safeguards and controls that govern the design and construction of vessels and equipment, and personnel manning qualifications.

Construction of tank barges must be approved by the Coast Guard, and once in service, they are inspected annually. Coast Guard statistics show that water transportation not only is subject to a high degree of regulation, but also operates under a stringent regulatory program.

Minimizes Congestion

The steady increase in highway traffic in the U.S. has far outstripped any increase in infrastructure capacity, resulting in delays, safety problems, and congestion, costing the nation up to \$100 billion annually.

The results of this congestion are reflected in more accidents, increased energy consumption, environmental damage, increased commuting times, and greater social tension. Water transport, in contrast, does not have congestion problems, and seldom causes them for others. The fact is, that far from being congested, the country's water transport system is under utilized.

Minimizes Air/Noise Pollution

Some of the most pervasive and intrusive sources of noise and air pollution are transportation systems.

Noise levels have been rising due to a number of reasons, with transportation activity the major source. Air pollution comes from a wide variety of man-made and natural sources, with fossil fuel combustion the largest contributor. Air pollution caused by transportation includes pollutants directly emitted by engines as well as secondary pollutants formed by chemical reactions.

Even though air pollution resulting from water transport operations is negligible, the waterway industry has been, and is, installing vapor control systems to capture any emissions. Cumulatively, the barge industry has a relatively minor effect on air quality, consumes much less energy (and as a result, produces less air pollution) per ton-mile of freight carried than either rail or truck. For the most part, waterway operations are conducted away from population centers, which reduce the impact of its exhaust emissions. Little data exists on noise levels of barge operations, mainly because they are not considered a problem. Towboats operate well away from shore, with the sound of their engines muffled below the water line, and any noise levels are hardly audible beyond the immediate area of the tow.

Positive Land Use/Social Impact

For the most part, inland river transport has little impact on densely populated areas. These shallow-draft vessels operate in mid-river, well away from shore, and because of the large tonnage moved at one time, tow passages are infrequent. This low-profile type of operation is one of the transportation industry's best kept secrets.

Since most of the right-of-way from water transport is provided by nature, inland navigation is less likely than other transport forms to compete with non-transportation uses for land area, an important consideration in urban locations. Apart from a few connections and waterside terminals, waterways preempt very little land.

Multiple Benefits

Besides navigation, transporting cargo by barge has a number of other benefits and many beneficiaries.

When a new navigation project is completed, more than water transportation benefits. The other major beneficiaries of developed waterway systems include recreation, flood control, public water supply, wildlife habitat, irrigation, and industrial use. And oftentimes, the benefits of these other purposes are as important as the waterway itself - which is an economic spur to the particular region where it is located. Navigation not only creates opportunities for new industries, but may also change trade patterns that can have a major economic impact on local and regional development.

In addition to navigation, commercial waterway activity has been a good environmental neighbor. In the process of building waterway projects, provisions are made to preserve, enhance, or create wetland and aquatic habitats. National wildlife refuges and designated areas along the rivers are home to many species of fish and wildlife, and are used by both migratory and resident bird populations.

Conclusion

There is a growing national commitment to restoring and preserving our environment, a goal that has become a priority for the inland navigation industry.

The companies that make up the barge and towing industry have a reputation for a strong environmental stewardship and are dedicated to improving the compatibility of their operations with the environment in an effort to reduce environmental incidents to an absolute minimum. Pollution control, protection and enhancement of the environment, and maintenance of the ecological balance have long been major concerns of the waterway industry.

(Text adapted from *Environmental Advantages of Inland Barge Transportation*. Division of Domestic Trade, Maritime Administration.)

GRIP RUDDERS MEET THE ROADS

NATIONAL DEFENSE

Since the mid 1980's, the US military has learned that the domestic water transportation system is a cost-effective mode for moving military equipment. The Military Traffic Management Command has found vessel operators able to meet the requirements for bidding and for successfully carrying out the transport mission including having sufficient deck barge availability.

The original impetus to experimenting with water transport was to move national guard unit equipment to Fort Chafee, AR when the national training center was located there. Since the training site was moved to Fort Polk, LA, opportunities for moving equipment have continued and actually increased. Examples of states generating military equipment moves are Indiana, Kentucky (Fort Campbell), Michigan, Missouri, Oklahoma (Fort Sill), Texas (Fort Hood), and in May of 2002, Illinois.

Unit Transportation Officers have commented that the benefits of moving by water include: delivery dates (transit times) surprisingly close to rail; reduced equipment damage; training benefits from vessel loadout and offload operations; improved equipment security; and lower cost.

The National Aeronautics and Space Administration (NASA) has utilized specialized barges to move booster rockets by barge. First, the rockets are shipped to Stennis Space Center, MS for testing and then to Kennedy Space Center, FL for launching. This can be expected to continue. Boeing now produces rockets at a Tennessee River plant in northeast Mississippi. The *MV Delta Mariner*, now homeported in Pensacola, FL, was purposely constructed to carry the rockets on the inland waterways and oceans to Cape Canaveral. These shipments can also be expected to continue. The US Transportation Command planners have recently shown interest in the *Delta Mariner* due to her unique capabilities.

The GRIP states have numerous facilities that have utilized the marine transportation system to move equipment. Other facilities that can be anticipated to diversify to water by the 2020-2025 time frame include (in addition to those mentioned above): Anniston Army Depot, AL; Redstone Arsenal, AL; Fort Rucker, AL; Pine Bluff Arsenal, AR; Hurlburt Field, FL; Fort Benning, GA (via the Apalachicola River); Naval Construction Battalion Center (MS); McAlester Army Ammunition Plant (OK); and Milan Army Ammunition Plant (TN).

**COMPARISON OF THE BENEFITS OF
INLAND WATERWAY AND SHORT SEA FREIGHT TRANSPORTATION
VERSUS
LANDSIDE FREIGHT TRANSPORTATION**

With the prediction of the doubling of trade by the year 2020, it has become apparent that capacity issues must be addressed now in order to accommodate the ever-increasing demand on the U.S. transportation system.

Parameters for this study include infrastructure: the I-10/I-12 interstate corridor segment beginning immediately west of Houston, Texas at Katy and ending immediately east of Mobile, Alabama at Spanish Fort for the highway segment, and the Mississippi River from the mouth of the river to Baton Rouge, Louisiana. Also included in the study are articulated tug/barge vessels and austere ports for a domestic short sea freight transportation operation.

Based on research findings, it is deemed economically beneficial to use our natural and man-made waterways, e.g., Mississippi River, Tennessee-Tombigbee Waterway, Gulf Intracoastal Waterway, and Gulf of Mexico, to accommodate increased demand. Basis of determination: inland waterway and short sea freight transportation are alternative avenues for freight transportation at a fraction of the cost of building and maintaining a land-side highway (estimated annual maintenance dredging cost for the Mississippi River from the mouth of the river to Baton Rouge: \$92 million).¹ Note: These "highways" are already being maintained for larger ocean-going vessels or are maintenance free.

In contrast, to add an additional lane (one in each direction) east and west, on the I-10/I-12 corridor from Katy, Texas to Spanish Fort, Alabama (a 500 mile span) it would cost approximately \$12.5 Billion (\$25 million x 500 miles = \$12.5 billion) excluding maintenance.² The \$25 million per mile estimate is used because of the multi-state jurisdiction involved in this corridor project and unique conditions that must be addressed, e.g., the Atchafalya Basin segment and Mobile Bay tunnel.

In addition to the monetary factor in expanding capacity to meet predicted demand, there are other aspects in the equation: environmental constraints, highway congestion, safety, and landside space for transportation system development. The use of our waterways will alleviate pollution, protect and enhance the environment, and maintain an ecological balance.

A substantial amount of freight in the U.S. is already transported via water, however, unlike the European water freight transportation system, our waterways are significantly underutilized.

Water freight transportation is an alternative mode in the multi-modal system that alleviates congestion on our highways (one standard barge is equivalent to 58 large semis) and therefore is economically benefi-

cial to the U.S.

A viable vessel for inland waterway and short sea freight transportation is a roll on/roll off (Ro/Ro) articulated tug/barge vessel (ATB) service (tug connects to the barge with pivoting capability for stabilization purposes). This vessel would be self-sustained with a limited crew (the crew remains with the vessel for the duration of the job). Service would be on a 24-hour basis to prevent congestion. The ATB cost is:

500 foot barge, 10,000 H.P. @ \$30 million
500 foot barge, 7,000 H.P. @ \$28 million
300 foot barge, 6,000 H.P. @ \$20-23 million

The ATB concept, in which the pusher tug is fitted with a special coupling device, is gaining favor in North America and is being studied for possible employment carrying containers and Ro/Ro cargoes in Europe.³

The domestic short sea transportation operation envisioned consists of four tugs with several compatible barges so that the operation would be a continuous (24 hour operation) dedicated service. The advantage of the ATB is that the tug can detach the loaded barge at destination and pick up another loaded barge to be carried to another destination.

The vision also includes four simple ports (Ro/Ro ramps included) strategically placed from Mobile, Alabama to Houston, Texas. This terminal would not have storage facilities--freight would be on trailers that would immediately roll off the ATB and continue to their destination. The conceptual cost estimate of a new 40 acre containerized cargo terminal is \$32,000,000.⁴ A smaller port would cost substantially less.

In conclusion, to start up a domestic short sea freight transportation service, the cost is substantially less than the alternative: constructing additional lanes on the I-10/I-12 corridor between Spanish Fort, Alabama and Katy, Texas. Four ATBs @ 30 million each = \$120 million; four ports @ 32 million each = \$128 million; four additional barges @ 12 million each = \$48 million. This cost is approximately \$300 million in contrast to approximately \$12.5 billion.

¹ US Army Corps of Engineers, Maintenance Dredging Program, New Orleans District (added 2% per year for five years to average figure of \$83.5 million [$83.5 \text{ million} \times .10 = \92 million]).

² Eric Kalivoda, Louisiana Department of Transportation and Development, GRIP interview, conducted March 4, 2002 by Susan Schaefer, US-DOT/Maritime Administration, for the Where the Rudders Meet the Roads report. (He estimated \$25 million per mile for the Atchafalya Basin segment of the I-10/I-12 corridor.)

³ WorldCargo Online News, May 2001.

⁴ Latin American Trade & Transportation Study, Port Conceptual Development Cost Estimates, 2000.

**Where The Rudders Meet the Roads
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**Where the Rudders Meet the Roads
Participants
Sorted by Nexus**

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25.	METROPOLITAN PLANNING ORGANIZATION	Mr. Huey Dugas Chief of Planning Capital Region Planning Commission PO Box 3355 Baton Rouge LA 70821	MID GULF
26.	METROPOLITAN PLANNING ORGANIZATION	Mr. Ray Miller, Jr. AICP MPO Director/Assistant Director of Planning Victoria MPO/City of Victoria P. O. Box 1758 Victoria TX 77902-1758	WEST GULF
27.	METROPOLITAN PLANNING ORGANIZATION	Mr. Dwight Minton Transportation Planner I IMCAL P. O. Box 3164 Lake Charles LA 70602	MID GULF
28.	METROPOLITAN PLANNING ORGANIZATION	Ms. Karen Parsons Intermodal Manager Regional Planning Commission 1340 Poydras Street, Suite 2100 New Orleans LA 70112	MID GULF
29.	NON PROFIT	Ms. Sherri McConnell Executive Director Port Association of Louisiana P. O. Box 44312 Baton Rouge LA 70804	MID GULF
30.	NON PROFIT	Dr. Deirdre McGowan Executive Director Mississippi Water Resources Assn. P O Box 4200 Jackson MS 39296-4200	LOWER MISSISSIPPI

	Nexus	Name	Sub-Region
31.	NON PROFIT	Mr. Jerry Sailors Executive Vice-President Coosa Alabama River Improvement Association 200 Coosa Street, #212 Montgomery AL 36104	EAST GULF
32.	NON PROFIT	Ms. Maggie Woodruff Director of Area Councils & Transportation NO Regional Chamber of Commerce 601 Poydras, Ste. 1700 New Orleans LA 70130	MID GULF
33.	PORT	Ms. Ginger E. Adam Consultant Port of Lake Charles P O Box 3753 Lake Charles LA 70602	MID GULF
34.	PORT	Mr. Eugene Bishop Executive Director Yellow Creek Port Authority 43CR370 Iuka MS 38852	TENN TOMBIGBEE
35.	PORT	Mr. Harold Burdine Port Director Greenville Port Commission P O Box 446 Greenville MS 38701	LOWER MISSISSIPPI
36.	PORT	Mr. John P. Carey Chief Administrative Officer Alabama State Docks P.O. Box 1588 Mobile AL 36633	EAST GULF
37.	PORT	Mr. R. C. Cornelison Manager/Port Director Port Isabel-San Benito Navigation District 250 Industrial Drive Port Isabel TX 78578	WEST GULF
38.	PORT	Mr. Gregory A. Deakle Director of Operations Hancock County Port & Harbor Commission P. O. Box 2267 Bay St. Louis MS 39521	LOWER MISSISSIPPI
39.	PORT	Mr. Ted M. Falgout Executive Director Greater Lafourche Port Commission P O Drawer 490 Galliano LA 70354	MID GULF
40.	PORT	Mr. Gerald P. Fraiser President & CEO Yazoo County Port P. O. Box 172 Yazoo City MS 39194	LOWER MISSISSIPPI

	Nexus	Name	Sub-Region
41.	PORT	Mr. Wyly Gilfoil Port Director Port of Lake Providence Route 1, Box 3912 Lake Providence LA 71254-9801	MID GULF
42.	PORT	Mr. Jay G. Hardman P. E. Director of Engineering and Environmental Services Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	MID GULF
43.	PORT	Mr. John Hardy Director Loundes Co. Port Authority P. O. Box 663 Columbus MS 39703	TENN TOMBIGBEE
44.	PORT	Mr. Howard W. Hawthorne Executive Director Port of Victoria P.O. Box 2760 Victoria, TX 77902	WEST GULF
45.	PORT	Mr. Jimmy Heidel Port Director Warren County Port Commission P O Box 709 Vicksburg MS 39180	LOWER MISSISSIPPI
46.	PORT	Mr. Dean Hinton Marketing Manager Port of Pensacola P. O. Box 889 Pensacola FL 32594-0889	EAST GULF
47.	PORT	Mr. John W. Holt Executive Port Director Caddo-Bossier Parishes Port Commission P O Box 52071 Shreveport LA 71135	MID GULF
48.	PORT	Mr. Greg Johnson Director of Business Development Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	MID GULF
49.	PORT	Mr. John La Rue Port Director Port of Corpus Christi Authority P O Box 1541 Corpus Christi TX 78403	WEST GULF
50.	PORT	Mr. Charlie P. Lewis Deputy Director Panama City Port Authority & Foreign Trade Zone 65 P. O. Box 15095 Panama City FL 32408	EAST GULF

	Nexus	Name	Sub-Region
51.	PORT	Mr. Jim Loew Port Director Florence-Lauderdale Country Port Authority P. O. Box 1169 Florence AL 35631	TENN TOMBIGBEE
52.	PORT	Mr. Mark McAndrews Port Director Jackson County Port Authority P O Box 70 Pascagoula MS 39568	EAST GULF & MID GULF
53.	PORT	Mr. Don C. McCrory Executive Director Memphis & Shelby County Port Commission 1115 Riverside Blvd. Memphis TN 38106-2504	LOWER MISSISSIPPI
54.	PORT	Mr. Tom Michie Asst. Director of Marketing Warrior & Gulf Navigation Company P. O. Box 11397 Chickasaw AL 36671	LOWER MISSISSIPPI
55.	PORT	Mr. Pat Murphy Port Director Natchez-Adams County Port Commission P O Box 925 Natchez MS 39121	LOWER MISSISSIPPI
56.	PORT	Mr. W. G. (Butch) Palmer, Jr. Port Director Port of Harlingen Authority P O Box 2646 Harlingen TX 78551	WEST GULF
57.	PORT	Mr. Tommy Pitts Port Director Port St. Joe Port Authority P. O. Box 246 Port St. Joe FL 32457	EAST GULF
58.	PORT	Mr. Charles Porter Port Director Port of Pensacola P O Box 889 Pensacola FL 32594	EAST GULF
59.	PORT	Mr. A. Philip Prejean Executive Director Port of West St. Mary P. O. Drawer 601 Franklin LA 70538	MID GULF
60.	PORT	Mr. Roger P. Richard Chief Executive Officer Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	MID GULF

	Nexus	Name	Sub-Region
61.	PORT	Mr. German Rico Director of Marketing Port of Brownsville 1000 Foust Road Brownsville TX 78521	WEST GULF
62.	PORT	Mr. Tony Rodriguez Director of Marketing Port of Brownsville 1000 Foust Road Brownsville TX 78521	WEST GULF
63.	PORT	Mr. Benny Rousselle Plaquemines Parish President Plaquemines Parish Port Harbor and Terminal 106 Avenue G Belle Chasse LA 70037	MID GULF
64.	PORT	Ms. Karen St. Cyr Director of Public Affairs Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	MID GULF
65.	PORT	Mr. Les Stuart Manager, Trade & Development Alabama State Docks P O Box 1588 Mobile AL 36633	TENN TOMBIGBEE & LOWER MISSISSIPPI
66.	PORT	Mr. Urban Treuil Port Manager Plaquemines Port Harbor & Terminal District 124 Edna LaFrance Road Braithwaite LA 70040	MID GULF
67.	PORT	Mr. Ed Watson Port Administrator Terrebonne Port Commission P. O. Box 3797 Houma LA 70361	MID GULF
68.	PORT	Mr. George T. Williamson Port Director Tampa Port Authority P.O. Box 2192 Tampa FL 33601	EAST GULF
69.	PORT	Mr. Michael G. Wilson President Texas Ports Association 295 E. Hidalgo Raymondville TX 78580	WEST GULF
70.	PORT	Mr. David Work Port Director Rosedale-Bolivar County Port Commission P O Box 460 Rosedale MS 38769	LOWER MISSISSIPPI

	Nexus	Name	Sub-Region
71.	RIVER ORGANIZATION	Mr. Johnny Bellis Board Member Tennessee Tombigbee Water Development Association 250 Collins Savannah TN 38372	TENN TOMBIGBEE
72.	RIVER ORGANIZATION	Mr. Raymond Butler Executive Director Gulf Intracoastal Canal Association 2010 Butler Drive Friendswood TX 77546	WEST GULF
73.	RIVER ORGANIZATION	Ms. Jan Jones Executive Director Tennessee River Valley Association P. O. Box 1745 Decatur AL 35602	TENN TOMBIGBEE
74.	RIVER ORGANIZATION	Mr. Vip D. Lewis Board Member Tennessee Tombigbee Waterway Authority 700 Yager Mosco TN 38057	TENN TOMBIGBEE
75.	RIVER ORGANIZATION	Mr. David Long Treasurer Tennessee Tombigbee Water Development Association 30 Fairground Savannah TN 38372	TENN TOMBIGBEE
76.	RIVER ORGANIZATION	Mr. Don Waldon Administrator Tennessee Tombigbee Water Development Association P O Box 671 Columbus MS 39703	TENN TOMBIGBEE
77.	RIVER ORGANIZATION	Ms. Christi Webb Board Member Tennessee Tombigbee Water Development Association P. O. Box 368 Baldwyn MS 38824	TENN TOMBIGBEE
78.	SHIPPING	Mr. Richard Couch President Osprey Line 413 North 10th Sreet La Porte TX 77571	MID GULF
79.	SHIPPING	Captain George E. Duffy President Navios Ship Agencies Inc. 120 Mallard Street, Suite 210 St. Rose LA 70087	MID GULF
80.	SHIPPING	Mr. Charles Spivey Production Superintendant Equistar Chemical Company 150 McKinzie Road Corpus Christi TX 78410	WEST GULF

	Nexus	Name	Sub-Region
81.	STATE GOVERNMENT	Mr. Paul Adams Deputy Director Oklahoma Department of Transportation 200 N E 21st Street Oklahoma City OK 73105-3204	LOWER MISSISSIPPI
82.	STATE GOVERNMENT	Mr. Tom Bartkiewicz Transportation Planner Louisiana Department of Transportation Development 1201 Capitol Access Road Baton Rouge LA 70804	MID GULF
83.	STATE GOVERNMENT	Mr. Glen L. Cheatham, Jr. Waterways Branch Manager Oklahoma Department of Transportation P O Box 660 Tulsas OK 74101	LOWER MISSISSIPPI
84.	STATE GOVERNMENT	Mr. Marlin D. Collier Director Office of Intermodal Planning Mississippi Department of Transportation P O Box 1850 Jackson MS 39215-1850	LOWER MISSISSIPPI
85.	STATE GOVERNMENT	Colonel Tom Atkinson, CPA Deputy Assistant Secretary Intermodal Transportation/LADOTD P O Box 94245 Baton Rouge LA 70804-9245	MID GULF
86.	STATE GOVERNMENT	Mr. Dennis Cook Executive Director of Operations Tennessee Department of Transportation James K. Polk Building, Suite 700 Nashville TN 37243-0349	TENN TOMBIGBEE
87.	STATE GOVERNMENT	Mr. Wayne Dennis Director of Multimodal Transportation Texas Department of Transportation/TPP Division 150 E. Riverside Drive Austin TX 78714-9217	WEST GULF
88.	STATE GOVERNMENT	Dr. Eric I. Kalivoda Deputy Asst. Secretary, Office of Planning & Programming Louisiana Department of Transportation & Development P O Box 94245 Capitol Station Baton Rouge LA 70804-9245	MID GULF
89.	STATE GOVERNMENT	Mr. Cliff McKinney Intermodal Transport Planner Arkansas State Highway & Transportation Department P O Box 2261 Little Rock AR 72203-2261	LOWER MISSISSIPPI
90.	STATE GOVERNMENT	Mr. G. Wayne Parrish Director, MDOT Ports & Waterways Division Mississippi Department of Transportation P O Box 1850 Jackson MS 39215-1850	TENN TOMBIGBEE & LOWER MISSISSIPPI

	Nexus	Name	Sub-Region
91.	STATE GOVERNMENT	Mr. Kenneth E. Perret Assistant Secretary for Planning & Programs Louisiana Department of Transportation & Development P O Box 94245 Capitol Station Baton Rouge LA 70804-9245	MID GULF
92.	STATE GOVERNMENT	Mr. Ed Preau Ass't Secretary, Public Works and Intermodal Transportation & Flood Control State of Louisiana, DOT & Development P O Box 94245 Baton Rouge LA 70804-9245	MID GULF

**Where the Rudders Meet the Roads
Participants
Sorted by Sub-Region**

	Sib-Region	Name	Nexus
1.	ALL	Mr. John W. Carnes Central Region Director US DOT/Maritime Administration 501 Magazine Steet, Suite 1223 New Orleans LA 70130-1137	FEDERAL GOVERNMENT
2.	ALL	Mr. James Murphy Ports & Environmental Officer US DOT/Maritime Administration 501 Magazine Street, Suite 1223 New Orleans LA 70130-3394	FEDERAL GOVERNMENT
3.	EAST GULF	Mr. John P. Carey Chief Administrative Officer Alabama State Docks P.O. Box 1588 Mobile AL 36633	PORT
4.	EAST GULF	Mr. Dean Hinton Marketing Manager Port of Pensacola P. O. Box 889 Pensacola FL 32594-0889	PORT
5.	EAST GULF	Mr. Charlie P. Lewis Deputy Director Panama City Port Authority & Foreign Trade Zone 65 P. O. Box 15095 Panama City FL 32408	PORT
6.	EAST GULF	Mr. Tommy Pitts Port Director Port St. Joe Port Authority P. O. Box 246 Port St. Joe FL 32457	PORT
7.	EAST GULF	Mr. Charles Porter Port Director Port of Pensacola P O Box 889 Pensacola FL 32594	PORT
8.	EAST GULF	Mr. Jerry Sailors Executive Vice-President Coosa Alabama River Improvement Association 200 Coosa Street, #212 Montgomery AL 36104	NON PROFIT
9.	EAST GULF	Ms. Fawn Thompson Statewide Intermodal Planner USDOT/Federal Highway Administration Southern Resource Center 61 Forsyth St. SW, Suite 17T26 Atlanta GA 30303	FEDERAL GOVERNMENT

	Sub-Region	Name	Nexus
10.	EAST GULF	Mr. George T. Williamson Port Director Tampa Port Authority P.O. Box 2192 Tampa FL 33601	PORT
11.	EAST GULF & MID GULF	Mr. Mark McAndrews Port Director Jackson County Port Authority P O Box 70 Pascagoula MS 39568	PORT
12.	LOWER MISSISSIPPI	Mr. Paul Adams Deputy Director Oklahoma Department of Transportation 200 N E 21st Street Oklahoma City OK 73105-3204	STATE GOVERNMENT
13.	LOWER MISSISSIPPI	Mr. Harold Burdine Port Director Greenville Port Commission P O Box 446 Greenville MS 38701	PORT
14.	LOWER MISSISSIPPI	Mr. Glen L. Cheatham, Jr. Waterways Branch Manager Oklahoma Department of Transportation P O Box 660 Tulsas OK 74101	STATE GOVERNMENT
15.	LOWER MISSISSIPPI	Mr. Marlin D. Collier Director Office of Intermodal Planning Mississippi Department of Transportation P O Box 1850 Jackson MS 39215-1850	STATE GOVERNMENT
16.	LOWER MISSISSIPPI	Mr. Gregory A. Deakle Director of Operations Hancock County Port & Harbor Commission P. O. Box 2267 Bay St. Louis MS 39521	PORT
17.	LOWER MISSISSIPPI	Mr. Gerald P. Fraiser President & CEO Yazoo County Port P. O. Box 172 Yazoo City MS 39194	PORT
18.	LOWER MISSISSIPPI	Mr. Jimmy Heidel Port Director Warren County Port Commission P O Box 709 Vicksburg MS 39180	PORT
19.	LOWER MISSISSIPPI	Mr. Lawrence Kastner Assistant Division administrator USDOT/Federal Highway Administration 666 North Street, Ste. 105 Jackson MS 39202-3199	FEDERAL GOVERNMENT
20.	LOWER MISSISSIPPI	Mr. Don C. McCrory Executive Director Memphis & Shelby County Port Commission 1115 Riverside Blvd. Memphis TN 38106-2504	PORT

	Sub-Region	Name	Nexus
21.	LOWER MISSISSIPPI	Dr. Deirdre McGowan Executive Director Mississippi Water Resources Association P O Box 4200 Jackson MS 39296-4200	NON PROFIT
22.	LOWER MISSISSIPPI	Mr. Cliff McKinney Intermodal Transport Planner Arkansas State Highway & Transportation Department P O Box 2261 Little Rock AR 72203-2261	STATE GOVERNMENT
23.	LOWER MISSISSIPPI	Mr. Tom Michie Asst. Director of Marketing Warrior & Gulf Navigation Company P. O. Box 11397 Chickasaw AL 36671	PORT
24.	LOWER MISSISSIPPI	Mr. Pat Murphy Port Director Natchez-Adams County Port Commission P O Box 925 Natchez MS 39121	PORT
25.	LOWER MISSISSIPPI	Mr. Robert D. Radics Intermodal Planning Engineer USDOT/Federal Highway Administration Southern Resource Center 61 Forsyth St. SW, Suite 17T26 Atlanta GA 30303	FEDERAL GOVERNMENT
26.	LOWER MISSISSIPPI	Mr. Paul Revis Partner Diversified Management Group 1359 Scott Street Conway AR 72034	CONSULTANT
27.	LOWER MISSISSIPPI	Mr. David Work Port Director Rosedale-Bolivar County Port Commission P O Box 460 Rosedale MS 38769	PORT
28.	LOWER MISSISSIPPI & TENN TOMBIGBEE	Mr. Pat Robbins Chief, Legislative & Public Affairs Mobile District United States Army Corps of Engineers P O Box 2288 Mobile AL 36628	FEDERAL GOVERNMENT
29.	MID GULF	Ms. Ginger E. Adam Consultant Port of Lake Charles P O Box 3753 Lake Charles LA 70602	PORT
30.	MID GULF	Mr. Tom Bartkiewicz Transportation Planner Louisiana Department of Transportation & Development 1201 Capitol Access Road Baton Rouge LA 70804	STATE GOVERNMENT

	Sub-Region	Name	Nexus
31.	MID GULF	Colonel Tom Atkinson, CPA Deputy Assistant Secretary Intermodal Transportation Louisiana Department of Transportation & Development P O Box 94245 Baton Rouge LA 70804-9245	STATE GOVERNMENT
32.	MID GULF	Ms. Carolyn E. Cook Assistant Grade Crossing Manager US DOT/Federal Railroad Administration Region V 2320 LaBranch Street, Room 2102 Houston TX 77004	FEDERAL GOVERNMENT
33.	MID GULF	Mr. Richard Couch President Osprey Line 413 North 10th Sreet La Porte TX 77571	SHIPPING
34.	MID GULF	Captain George E. Duffy President Navios Ship Agencies Inc. 120 Mallard Street, Suite 210 St. Rose LA 70087	SHIPPING
35.	MID GULF	Mr. Huey Dugas Chief of Planning Capital Region Planning Commission PO Box 3355 Baton Rouge LA 70821	METROPOLITAN PLANNING ORGANIZATION
36.	MID GULF	Mr. Ted M. Falgout Executive Director Greater Lafourche Port Commission P O Drawer 490 Galliano LA 70354	PORT
37.	MID GULF	Ms. M. J. Fiocco Transportation Specialist, Freight, Office of Intermodalism US DOT/ Office of the Secretary 400 7th Street, SW, Suite 10200 Washington DC 20590	FEDERAL GOVERNMENT
38.	MID GULF	Mr. Wylly Gilfoil Port Director Port of Lake Providence Route 1, Box 3912 Lake Providence LA 71254-9801	PORT
39.	MID GULF	Mr. Jay G. Hardman P. E. Director of Engineering and Environmental Services Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	PORT
40.	MID GULF	Mr. John W. Holt Executive Port Director Caddo-Bossier Parishes Port Commission P O Box 52071 Shreveport LA 71135	PORT

	Sub-Region	Name	Nexus
41.	MID GULF	Mr. Greg Johnson Director of Business Development Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	PORT
42.	MID GULF	Dr. Eric I. Kalivoda Deputy Asst. Secretary, Office of Planning & Programming Louisiana Department of Transportation & Development P O Box 94245 Capitol Station Baton Rouge LA 70804-9245	STATE GOVERNMENT
43.	MID GULF	Ms. Sherri McConnell Executive Director Port Association of Louisiana P. O. Box 44312 Baton Rouge LA 70804	NON PROFIT
44.	MID GULF	RADM William T. McMullen PhD United States Maritime Service Superintendent Texas State Maritime Programs, Texas A&M University at Galveston P O Box 1675 Galveston TX 77553	ACADEMIC
45.	MID GULF	Mr. Dwight Minton Transportation Planner I IMCAL P. O. Box 3164 Lake Charles LA 70602	METROPOLITAN PLANNING ORGANIZATION
46.	MID GULF	Mr. Virgil Page Planning & Research Engineer USDOT/Federal Highway Administration 5304 Flanders Drive, Suite A Baton Rouge LA 70808-4348	FEDERAL GOVERNMENT
47.	MID GULF	Ms. Karen Parsons Intermodal Manager Regional Planning Commission 1340 Poydras Street, Suite 2100 New Orleans LA 70112	METROPOLITAN PLANNING ORGANIZATION
48.	MID GULF	Mr. Kenneth E. Perret Assistant Secretary for Planning & Programs Louisiana Department of Transportation & Development P O Box 94245 Capitol Station Baton Rouge LA 70804-9245	STATE GOVERNMENT
49.	MID GULF	Mr. Ed Preau Ass't Secretary, Public Works and Intermodal Transportation & Flood Control Louisiana Department of Transportation & Development P O Box 94245 Baton Rouge LA 70804-9245	STATE GOVERNMENT
50.	MID GULF	Mr. A. Philip Prejean Executive Director Port of West St. Mary P. O. Drawer 601 Franklin LA 70538	PORT

	Sub-Region	Name	Nexus
51.	MID GULF	Mr. Roger P. Richard Chief Executive Officer Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	PORT
52.	MID GULF	Mr. Benny Rousselle Plaquemines Parish President Plaquemines Parish Port Harbor and Terminal 106 Avenue G Belle Chasse LA 70037	PORT
53.	MID GULF	Ms. Karen St. Cyr Director of Public Affairs Port of Greater Baton Rouge P O Box 380 Port Allen LA 70767-0380	PORT
54.	MID GULF	Mr. Urban Treuil Port Manager Plaquemines Port Harbor & Terminal District 124 Edna LaFrance Road Braithwaite LA 70040	PORT
55.	MID GULF	Mr. Ed Watson Port Administrator Terrebonne Port Commission P. O. Box 3797 Houma LA 70361	PORT
56.	MID GULF	Ms. Maggie Woodruff Director of Area Councils & Transportation NO Regional Chamber of Commerce 601 Poydras, Ste. 1700 New Orleans LA 70130	NON PROFIT
57.	MID GULF, WEST GULF, & EAST GULF	Ms. Susan E. Schaefer Intermodal Transportation Specialist US DOT/Maritime Administration 501 Magazine Street, Ste. 1223 New Orleans LA 70130	FEDERAL GOVERNMENT
58.	TENN TOMBIGBEE	Mr. David E. Anderson Economic Dev. Specialist Tennessee Valley Association P. O. Box 1010 Muscle Shoals AL 35662	FEDERAL GOVERNMENT
59.	TENN TOMBIGBEE	Mr. Johnny Bellis Board Member Tennessee Tombigbee Water Development Association 250 Collins Savannah TN 38372	RIVER ORGANIZATION
60.	TENN TOMBIGBEE	Mr. Eugene Bishop Executive Director Yellow Creek Port Authority 43CR370 Iuka MS 38852	PORT

	Sub-Region	Name	Nexus
61.	TENN TOMBIGBEE	Mr. Harry Blazek Project Manager United States Army Corps of Engineers P. O. Box 1020 Nashville TN 37202	FEDERAL GOVERNMENT
62.	TENN TOMBIGBEE	Mr. Chuck Boyd Division Administrator USDOT/Federal Highway Administration 640 Grassmere PK RD - Suite 112 Nashville TN 37211	FEDERAL GOVERNMENT
63.	TENN TOMBIGBEE	Mr. Bob Buchanan Specialist, Navigation, Operations Tennessee Valley Authority 400 W. Summit Hill Drive Knoxville TN 37902	FEDERAL GOVERNMENT
64.	TENN TOMBIGBEE	Mr. Dennis Cook Executive Director of Operations Tennessee Department of Transportation James K. Polk Building, Suite 700 Nashville TN 37243-0349	STATE GOVERNMENT
65.	TENN TOMBIGBEE	Mr. Jim Davis Operations Manager United States Army Corps of Engineers 704 S Wilson Dam Road Florence AL 35630	FEDERAL GOVERNMENT
66.	TENN TOMBIGBEE	Mr. John Hardy Director Loundes Co. Port Authority P. O. Box 663 Columbus MS 39703	PORT
67.	TENN TOMBIGBEE	Mr. J. Richard (Rich) Hommrich President Volunteer Barge & Transport Inc. P. O. Box 178181 Nashville TN 37217-8181	MARITIME
68.	TENN TOMBIGBEE	Mr. H. Steve Jackson Attorney at Law Tennessee Tombigbee Water Development Association P.O. Box 414 Iuka MS 38857	LAW
69.	TENN TOMBIGBEE	Ms. Jan Jones Executive Director Tennessee River Valley Association P. O. Box 1745 Decatur AL 35602	RIVER ORGANIZATION
70.	TENN TOMBIGBEE	Mr. Vip D. Lewis Board Member Tennessee Tombigbee Waterway Authority 700 Yager Mosco TN 38057	RIVER ORGANIZATION

	Sub-Region	Name	Nexus
71.	TENN TOMBIGBEE	Mr. Jim Loew Port Director Florence-Lauderdale Country Port Authority P. O. Box 1169 Florence AL 35631	PORT
72.	TENN TOMBIGBEE	Mr. David Long Treasurer Tennessee Tombigbee Water Development Association 30 Fairground Savannah TN 38372	RIVER ORGANIZATION
73.	TENN TOMBIGBEE	Mr. Ted Mosley Manager Logistic Services, Inc. P.O. Box 1106 Columbus MS 39703	LOGISTICS
74.	TENN TOMBIGBEE	Mr. Rich Saucer Chief, Navigation Branch United States Army Corps of Engineers 3606 W. Plymouth Road Columbus MS 39701	FEDERAL GOVERNMENT
75.	TENN TOMBIGBEE	Mr. Don Waldon Administrator Tennessee Tombigbee Water Development Association P O Box 671 Columbus MS 39703	RIVER ORGANIZATION
76.	TENN TOMBIGBEE	Ms. Christi Webb Board Member Tennessee Tombigbee Water Development Association P. O. Box 368 Baldwyn MS 38824	RIVER ORGANIZATION
77.	TENN TOMBIGBEE & LOWER MISSISSIPPI	Mr. G. Wayne Parrish Director, MDOT Ports & Waterways Division Mississippi Department of Transportation P O Box 1850 Jackson MS 39215-1850	STATE GOVERNMENT
78.	TENN TOMBIGBEE & LOWER MISSISSIPPI	Mr. Les Stuart Manager, Trade & Development Alabama State Docks P O Box 1588 Mobile AL 36633	PORT
79.	WEST GULF	Mr. Jerry Bobo Program Manager Houston-Galveston Area Council PO Box 22777 Houston TX 77227-2777	METROPOLITAN PLANNING ORGANIZATION
80.	WEST GULF	Mr. Raymond Butler Executive Director Gulf Intracoastal Canal Association 2010 Butler Drive Friendswood TX 77546	RIVER ORGANIZATION

	Sub-Region	Name	Nexus
81.	WEST GULF	Lieutenant Wayne Clayborne United States Coast Guard Marine Safety Officer 555 N. Carachua Street, Ste 500 Corpus Christi TX 78478	FEDERAL GOVERNMENT
82.	WEST GULF	Mr. R. C. Cornelison Manager/Port Director Port Isabel-San Benito Navigation District 250 Industrial Drive Port Isabel TX 78578	PORT
83.	WEST GULF	Mr. Wayne Dennis Director of Multimodal Transportation Texas Department of Transportation/TPP Division 150 E. Riverside Drive Austin TX 78714-9217	STATE GOVERNMENT
84.	WEST GULF	Mr. Howard W. Hawthorne Executive Director Port of Victoria P.O. Box 2760 Victoria, TX 77902	PORT
85.	WEST GULF	Mr. John La Rue Port Director Port of Corpus Christi Authority P O Box 1541 Corpus Christi TX 78403	PORT
86.	WEST GULF	Mr. Ray Miller, Jr. AICP MPO Director/Assistant Director of Planning Victoria MPO/City of Victoria P. O. Box 1758 Victoria TX 77902-1758	METROPOLITAN PLANNING ORGANIZATION
87.	WEST GULF	Mr. Stephen J. Ondrejas Assistant Professor of Business Administration Del Mar College 101 Baldwin Blvd., VB 161 Corpus Christi TX 78404-3897	ACADEMIC
88.	WEST GULF	Mr. W. G. (Butch) Palmer, Jr. Port Director Port of Harlingen Authority P O Box 2646 Harlingen TX 78551	PORT
89.	WEST GULF	Mr. German Rico Director of Marketing Port of Brownsville 1000 Foust Road Brownsville TX 78521	PORT
90.	WEST GULF	Mr. Tony Rodriguez Director of Marketing Port of Brownsville 1000 Foust Road Brownsville TX 78521	PORT

	Sub-Region	Name	Nexus
91.	WEST GULF	Mr. Charles Spivey Production Superintendent Equistar Chemical Company 150 McKinzie Road Corpus Christi TX 78410	SHIPPING
92.	WEST GULF	Mr. Michael G. Wilson President Texas Ports Association 295 E. Hidalgo Raymondville TX 78580	PORT

Comments & Notes