Written Testimony on
“Keeping Goods Moving”

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This written testimony is submitted by Dr. Walter Kemmsies, chief economist at Moffatt & Nichol, to the Senate Committee on Commerce, Science, and Transportation’s Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security hearing entitle “Keeping Goods Moving” on Tuesday, February 10, 2015.

AUTHOR’S BACKGROUND

Dr. Walter Kemmsies is the chief economist at Moffatt & Nichol, a marine infrastructure engineering and advisory company founded in 1945 that currently has over 650 employees in offices located near major ports throughout the Americas, Europe and the Pacific Rim. Dr. Kemmsies directs market assessment studies, financial analyses and global trade forecasts for projects ranging from strategic development and capital improvement plans for ports through financial transactions involving leases and sales of marine terminals. He is an advisor to executives at various port authorities and major transportation and manufacturing companies. Prior to joining Moffatt & Nichol, he was the Head of European Strategy at JP Morgan and before that the Head of Global Strategy at UBS.

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1. KEY ISSUES RELATED TO "KEEPING GOODS MOVING"

The hearing is focused on the importance of a reliable and efficient supply chain, particularly shipments to and from U.S. ports, including opportunities and challenges in decreasing delays and congestion throughout the supply chain. To that end my focus is on four points described in the following subsections of this written testimony.

1.1. SUPPLY CHAINS OR PRODUCT FLOW PATHS

Supply chains are characterized by intermodalism in that they consist of the combination of highway and railway segments, as well as ports and marine trade lanes which are the routes and services operated by ocean carriers. For cargo that is traded internationally a flow path consists of truck drayage from manufacturing/processing/refining locations to ports or to railheads for intermodal transportation to ports, transfer to ships at the ports, the ocean carrier routing to the foreign destination port and transfer to truck, barge or rail for delivery at the final destination.

Although the same roadways, railways, barges and ports are used to handle a range of different cargo types, the equipment and infrastructure needed to handle types of cargo is varied. The infrastructure includes facilities such as warehouses, cross-dock facilities for repackaging freight and storage facilities. Dry goods can be moved in variety of container types and sizes or in large bulk vessels as well as rail hopper cars. Liquid goods such as petroleum, gases, and chemicals are carried in different types of vessels, barges, rail cars and trucks.

Since the type of products that the US tends to import is different than the type of products it exports, different types of infrastructure are needed to support imports and exports. At or near ports the imported freight infrastructure is generally oriented towards deconsolidating cargo that arrives on tightly packed ships and airplanes while that for exports supports consolidation in order to be loaded on to ships and airplanes.

It appears that most of the investment in infrastructure and equipment for freight movement in the US in the last few decades has been more oriented towards imports than exports. Evidence to support this hypothesis includes the substantial goods trade deficit that the US has developed as well as the nature of large scale freight movement projects that have been executed and those that have suffered from under-investment such as the Mississippi Inland River System.

The types of equipment and consolidation/deconsolidation infrastructure are important elements of their respective supply chain(s) For example, the availability of empty international containers for US agricultural exports is such a significant issue that the U.S. Department of Agriculture publishes a weekly report called Ocean Shipping Container Availability Report (OSCAR) based on its polling of ocean carriers. The report provides details of the types of containers that ocean borne freight and their locations.

In 2014, for example, The US imported an estimated 16.7 million TEU, mostly containing consumer goods and finished products. To keep the containers in circulation, the US exported an estimated 11.5 million TEUs, mostly containing waste paper, agricultural products in both dry and refrigerated containers, and industrial goods. The US exports empty dry containers but tends to import refrigerated containers so as to support agricultural exports.

The containers are owned by the ocean carriers and cost $5,000 for a new dry container and $18,000 for a refrigerated container. Ocean carriers track their containers very carefully in an attempt to minimize the amount of time they are empty and therefore not generating revenue. These containers are generally not interchangeable between ocean carriers as they need to make sure that they can provide their customers with the needed equipment to ship their goods.

Analysis of the OSCAR data indicates that the Midwest suffers from a consistent shortage of available containers to support containerized grain shipments. Most international containers imported into the U.S. carry consumer and industrial goods which are destined to urban locations. Therefore there is a mismatch between where containers are available and where they are needed for exports. Therefore, exporters have to pay a higher cost for containers that need to be repositioned.

For example, a major exporter of non-genetically modified soybeans to Asia commands a price premium since they are most suitable for human consumption but need to be packaged in a way that preserves the ability to trace the product back to its geographical production location, which is referred to as identity preservation or more commonly referred to as "IP". To do this the product is packaged close to the farm and containerized. An upper Midwest producer has to pay trucking costs ~~fee~~ that exceed $900 for a single container to be brought to its packaging operations. In addition to the cost, the producer often has to wait, sometimes months, for containers to be delivered.[1]

The time delay is a serious issue because agricultural goods are traded sometimes under quota systems set up in free trade agreements. If a shipment does not arrive and clear customs in the foreign location during the current calendar year then it accrues to the following calendar year. Foreign importers are allowed to grow their import quantities at a set rate based on the previous year's import levels. Therefore delayed shipments reduce their imports in the current calendar year and can ultimately reduce them in the following calendar year as well. More importantly, global food companies rely on "just-in-time" service and in the current environment soy producers can lose customers due to shipment delays.

Almost all countries can produce agricultural commodities but only those that have efficient production and transportation can compete in the global market place. Exporters have to allocate significant time, expense, and energy to manage these logistics issues which reduces the resources they need to consistently produce a high-quality product that is competitive in the global market.

Import container rates are higher than export container rates, often by a factor of 3 or 4. Therefore ocean carriers prefer their containers to be emptied near the ports and immediately put on a ship to be returned to foreign import locations so as to minimize the time they spend empty and therefore not generating revenue. Recent congestion at US ports is likely to have negatively impacted container yield management and exporters' ability to obtain the containers they need to export their product.

There do not appear to be the same level of congestion issues at port gateways that handle non-containerized cargoes such as grains shipped on bulk vessels, petroleum and refined products, and vehicles. However there are issues concerning the rail movement of those goods, as others will testify today.

1.2. US AND INTERNATIONAL PORT GATEWAY CONGESTION ISSUES

To some extent the stevedore contract negotiations which began in 2014 on the West Coast have resulted in container handling delays that are masking some of the longer term issues that underlie the worsening congestion problems at ports. The underlying cause is increasing concentration of cargo on fewer but larger vessels and in fewer ports. However other short term factors have exacerbated the difficulties of adjusting to the industry's shift towards larger and more concentrated freight shipments.

It is worth reviewing the short term factors before considering the longer term issues. Short term factors include chassis supply issues, severe weather impacts and stevedore contract negotiations.

[1] Based on information provided by Bob Sinner, CEO of SB&B Foods in Casselton, ND

Ocean carriers began announcing in 2009 that they would no longer include a chassis for the shipper to use when their container was delivered at a US port. This was motivated by financial necessity but also brought industry practices in the US in line with those in the rest of the world. The US was the only market where ocean carriers provided chassis as part of the service they provided their customers

The process of disengaging from provision of chassis by ocean carriers is ongoing. In some regions ports have been able to organize “grey” chassis pools operated by the private sector. The term “grey” refers to the concept of any chassis being used at any port or terminal covered by the chassis pool operator. In some areas, Southern California and New York, in particular, there were various chassis pool operators that supplied equipment to carry containers only for specific carriers or carrier alliances. (A carrier alliance is technically called a vessel sharing agreement, which comes about when some carriers agree to supply vessels to cover a trade route and that any carrier receiving a customer order can send the container on an alliance carrier’s ship.)

The problem with non-grey pools is that a trucker may bring an empty container to a terminal for a certain carrier or alliance and have a request to pick up a container from another terminal for another carrier. Upon entering the port authority area, the trucker has to drop off the empty container at the terminal, then drop off the chassis, then pick up a chassis assigned to the other ocean carrier or alliance and finally pick up the loaded import container. Each of these steps takes time and can create congestion in the port area.

Besides the grey chassis issue, some ports had to contend with a shortage of suitable chassis. In 2009 the Roadability rule was enacted by the Federal Motor Carrier Safety Administration. Each chassis had to be checked for safety issues such as working brake lights. During the economic downturn in 2009 container volumes declined by 12% and chassis that were not in working order were mostly cast aside. In 2014 container volumes handled at US ports exceeded the 2007 peak level and many of the neglected chassis required either extensive repair or replacement. This contributed to the problems resulting from the transition from containers provided by ocean carriers to independent chassis providers.

The severe winter weather that impacted the Northeast and Midwest created significant problems for the US freight movement industry. Unusual cold weather and frequent snow storms made it difficult for the industry to recover. Inventories piled up in warehouses and in manufacturer facilities. On the West Coast the stevedore union contract negotiations are adding to the chassis issues and the slowing the recovery from the severe winter weather.

As international and domestic freight movement continue to grow, the capacity of the system is challenged in two ways. The first is that a higher average daily volume of traffic on the roadways and railways will require more capacity. The second effect is a result of ocean carriers operating larger vessels.

It is worth noting that once the Panama Canal expansion is completed (recently announced for the first half of 2016), it will be able to handle vessels about 13,200 to eventually 14,000 TEUs.

In 2007 the largest container vessel was the Emma Maersk, which can carry approximately 13,500 TEUs. In 2013 Maersk began using the first of its EEE class vessels, Maersk Mc-Kinney Møller, which can carry 18,000 TEUs. The EEE designation stood for “Economy of scale, Energy efficient and Environmentally improved”. In the last few months other large ocean carriers have announced deliveries of 19,000 TEU vessels and orders have been placed for even larger vessels.

According to Alphaliner 19% of the global vessel fleet consists of vessels of 10,000 or greater TEU capacity and 56% of the global vessel order book is for vessels of 10,000 or greater TEUs. At the end of 2012, 12% of the global vessel fleet consisted of vessels with 10,000 TEU or greater capacity. The larger vessels are really designed for the Asia to Europe trade which is

substantially larger than Asia to North America trade. However, as larger vessels are deployed on Asia to Europe routes, the displaced vessels tend to cascade into the Asia to North America trades, which displaces smaller vessels.

An 18,000 TEU vessel operating at an average annual rate of 90% container slot capacity utilization with six vessels on a string, each of which require a week in port for a full discharge and load, would require a terminal in the US to handle 1.6 million TEUs per year. Assuming that 30% of the containers move by rail to or from inland destinations and adjusting for the TEU to container ratio, this would mean that a single service using an 18,000 TEU vessel would generate about 12,000 truck trips per week. It is likely that these truck trips would not be evenly distributed throughout the work week which could create severe congestion in some of our densest urban areas.

It should also be noted that according to American Association of Port Authority data, the 12 largest gateway container ports in the US handle between 80% and 85% of all containers (measured in TEUs), about 10% higher than during the 1980’s and 1990’s. Thus not only are container volumes concentrating on fewer vessels they are concentrating in fewer ports.

Port congestion is a long term global issue. As the larger vessels were deployed on routes from Asia to Northern Europe last year, congestion problems flared up. Larger vessels also began calling at US ports, likely displaced from Asia to Europe services, and this coincided with increased congestion in the US. Ports in Asia already suffer from well-known congestion problems in their gateway regions. Congestion in port areas is an old problem in Latin America, with trucks in Southern Brazil often waiting in lines over 100 kilometers long during the three soy harvest export seasons. The largest port in South America, Santos, has been trying to solve this issue for decades.

According to the World Trade Organization, global trade in manufactured goods has grown at an average rate of 7.2% per year between 1950 and 2013. In recent years this has been slowing. It is likely that this is due to the weak global economic environment. As the global economy recovers it is likely that demand for freight services will increase and ocean carriers will turn in better financial performance, allowing them to continue to upgrade their vessel fleets. Considering that the substantial increase in large vessels operated by carriers during the last several years was achieved during a period of financial and economic weakness, one can only worry how strong the shift to larger vessels will be during better times.

It is not clear that departments of transportation in most states and metropolitan planning organizations have factored in the impact of larger vessels calling at fewer ports. However they will have to adapt to this soon. The industry is reacting with container terminal operators and ports getting access channels and berths dredged, ordering larger cranes to handle the larger vessels, railroads have experimented with unit trains as long as four miles and the trucking industry is lobbying for heavier and longer trucks.

There is still time to avoid the worst possible outcome but the planning for this has to begin now.

1.3. INCREASING US PORT AND ECONOMIC COMPETITIVENESS

At the national level, we worry about the balance of payments and we promote exports and export-related infrastructure, in part because these support “our” base industries. This is not as simple to figure out when it comes to infrastructure that would serve an economy with many base industries. Different types of commodities may not be compatible and investments in infrastructure to support one base industry may come at the expense of another base industry. Recent North American experience perfectly illustrates this conflict: supply chain providers have been unable to properly serve at least three base industries — energy, agriculture and chemicals. All three industries serve global markets and meet the definition of a “base” industry. Yet transportation infrastructure cannot properly serve all three industries in the short term.

Foreign ports and intermodal supply chains are stepping up where the US is leaving off. US' closest trading partners have been very focused on freight movement infrastructure. Canadian ports on the Pacific coast have been gaining share of North American container volumes while ports in the US Pacific Northwest have been losing share. Canada has had a coherent national transportation policy that relates to its economic policy since at least the early 1990s and updates its transportation policy on a somewhat regular basis. Mexico has increased its investments in ports, railways and highways over the last 10 years. Mexican ports did not see their volumes decline during the recent severe recession and are also gaining share of North American volumes. Brazil which as a recent USDA report pointed out has surpassed the US in soy exports for the first time in 2013 is also investing in freight movement infrastructure both on the waterside and the inland side.

Failure to cut costs across US ports – not cost cutting actions that simply build competition between US ports - means the loser is US ports versus foreign ports serving alternative sources of exports and imports. If US ports are losing then so is the US economy.

1.4. THE FOCUS MUST BE ON PORT GATEWAY REGIONS AND DEFENDING IMPORT AND EXPORT MARKETS

Ports, even large ones, do not individually serve all regions of the US but rather geographies that include population and economic activity centers to which they are connected via roads, railways and inland waterways. These regions are the ones for which ports serve as a gateway to international and domestic trade.

Ports have been proactive about getting their access channels and berths dredged, raising bridges where air draft is an issue, ordering larger cranes to service the larger vessels, improving intermodal container facilities so as to increase rail service capacity and to add more truck gates. When chassis have been a problem, port authorities have sponsored the development of grey pools and have been prepared to purchase chassis to make sure enough would be available during the peak seasons. Furthermore they have adjusted their properties to allow empty containers and chassis to be dropped off in lots near the entrance of the port in order to reduce congestion within its gates and allow truck drivers to do more turns per day. As the discussion above has indicated, larger problems lie outside the gate, and these are generally beyond the reach or resources of an individual port.

Thus the policy spotlight should be on the inland segment of the product flow path:

- On railroad lines in order to improve service to markets close to the port or extend service to more distant markets. Grade separations, major sidings to allow for longer unit trains, and leadership to resolve the tangle of rail operational issues surrounding every major port in the US, as well as major regional rail hubs such as Chicago or Atlanta.

- On highways and bridges to increase capacity, reduce community conflicts, introduce innovations such as truck freight-ways to improve access to distant markets and allow the safe trucking of heavier goods to more distant markets. The introduction of LNG fuel to long-haul trucking routes could allow for a more robust domestic supply chain, allowing new industries to flourish in new locations.

- On inland and intracoastal waterways that allow for the most efficient movement of the liquid and solid bulk building blocks of the US economy. Whether supporting the movement of rock salt to the Northeast or highly refined petroleum products along the Gulf Coast, the economic value of inland and intracoastal waterway improvements can be fairly immediate and quickly amplified throughout the US economy.