

Overcoming the Reagan 'Recovery'

The Virginia shipyards: spearhead for a nuclear merchant marine

by Joyce Fredman

First of a series of surveys of state-level production potentials, showing the means of overcoming the devastation of the U.S. economy in the Reagan administration's "Great Recovery," and restoring real economic growth.

The Commonwealth of Virginia is the home of one of the world's greatest natural harbors, the mouth of the James River, and one of the greatest present-day port and shipyard facilities, Hampton Roads. Yet, despite the Navy construction ongoing at Hampton Roads yards, most of the potential of the region is unused. Nationally, the Navy has become, in effect, the sole customer for U.S. shipyards, while at the same time, the U.S. merchant marine is in a crisis state of decline.

There have been no new orders for merchant vessels in U.S. yards in three years, and none in the planning stages. This degradation of the national marine industrial base is a national security issue, not merely a problem for the shipyard industrial centers of Virginia, New England, the Gulf, and the West Coast. However, the particular industrial and human resources concentrated in Hampton Roads could lead the way nationally to both an expanded Navy and merchant ship capacities needed by the United States and allies.

By the 1980s, the Western merchant fleet should already have been nuclear-powered, and reticulated into a grand array of vessels ranging from jumbo "mother" ships, down to coastal and river vessels. However, decades of regressive International Monetary Fund and related policies, have now decreased trade volume, and created what the IMF calls an "overcapacity" of merchant ships. The entire monetary system needs revamping to serve a restored production and trade-based system. The Virginia facilities can lead the way in creating a modernized, nuclear fleet for a once-again growing world economy.

The Virginia shipyards, which built the *USS United States* superliner, can build anything. In the past, these yards have built close to 3,000 commercial vessels and perfected the

techniques for "jumboizing"—taking the existing hull, cutting it, and adding sections, like a stretch limousine.

The Virginia yards could build ships 900-1,000 feet long—the type needed for modernizing the world merchant fleet. (The biggest tankers on the seas are about 1,200 feet long.) The yards can pioneer in the construction of modern, large, nuclear-driven merchant ships, because of their experience with technology for aircraft carriers.

The large, nuclear-driven merchant vessels would be transoceanic, point-to-point line vessels, that would be fed by smaller oceangoing feeder vessels, barges, and railroad piggy-back systems.

Hampton Roads itself is one of the leading shipping hubs of the world, and serves one of the world's most productive hinterlands. However, at present, the Hampton Roads port infrastructure is used at less than 50% of capacity. Reflecting the intense competition for shrinking freight flows, CSX Corp., a Richmond-based transportation company, which acquired Sea-Land shipping company in 1986, reported a drop of 19% in its second quarter net income this year.

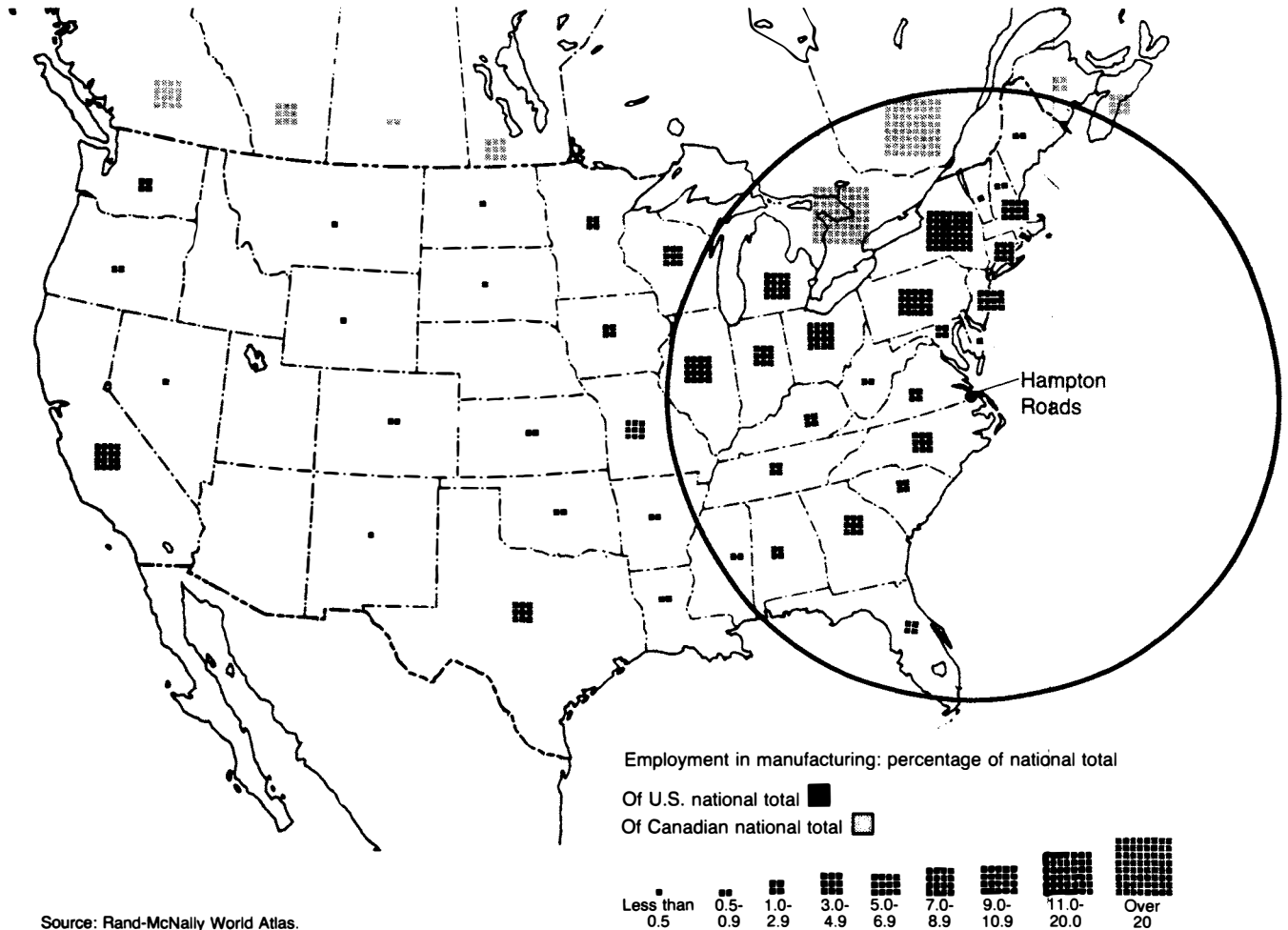
Ports

The James River port complex includes one of the finest natural harbors in the world and two upriver ports. Hampton Roads harbor and shipping center consists of marine terminals in Newport News, Norfolk, Portsmouth, and Chesapeake. Hampton Roads is comprised of nine independent cities and three counties; the 1,974-square-mile region goes from Williamsburg to the North Carolina border. It is presently the country's 29th largest market. *Two-thirds of the nation's population and three-fourths of its manufacturing activity lie within a 750-mile radius of the port*, which also is the home of the world's largest naval installation, NATO's United States headquarters command, and headquarters of the Atlantic fleet (see **Figure 1**).

This ice-free port is served by 45-foot deepwater channels and is capable of handling large volumes of nearly every

FIGURE 1

Three-quarters of U.S. manufacturing activity lies within a 750-mile radius of Hampton Roads



Source: Rand-McNally World Atlas.

category of cargo: containerized, breakbulk, heavylift, roll-on/roll-off, LASH, liquid, and dry bulk.

The upriver ports on the James are at Hopewell—originally a chemical center—and in Richmond, the state capital. The James River ports, combined with Alexandria on the Potomac, account for approximately 7.8% of the nation's foreign tonnage.

In 1985, more than 58 million tons of foreign trade went through Virginia ports. Traditionally, Hampton Roads is the number-one export port in the nation, a capacity which could be expanded much more.

According to the Virginia Department of Economic Development, regularly scheduled steamship services extend to every corner of the globe, with more than 75 steamship lines linking Hampton Roads with 260 ports in 97 foreign countries. The port is served by interconnecting transportation systems—5 railroads, 10 airlines, approximately 135 motor freight carriers, and river channels (see Figure 2). In addition, there is a general purpose Foreign Trade Zone in Suf-

folk, which has both rail and truck access. It includes 97,000 square feet of warehouse space on a 22-acre site which can be used for storage, distribution, and light assembly operations.

The largest U.S. shipbuilder

Newport News Shipbuilding, located at the Port of Hampton Roads in Newport News, is the largest shipbuilding complex in the United States. Founded in 1886, it is a subsidiary of Tenneco, Inc. Here is the country's foremost builder of nuclear warships for the U.S. Navy. This Virginia yard represents a not inconsequential potential when one considers that presently, the U.S. Navy is half the size of the Soviet Union's, and its number of submarines is only one-third theirs.

As this complex has historically been a leader in the application of high technology to shipbuilding and provided a variety of engineering and design services to the Navy, it is worth taking a somewhat detailed look at the capacity.

According to the 1986 report of the Maritime Administration, the 150-acre north yard was designed for high production and efficiency and has the capability to handle large components from fabricating areas to final erection. Data storage and retrieval systems control material storage and work flow. The building basin, the largest in the country, is 1,613 feet (492 m) long, 250 feet (76 m) wide, and 33 feet (10 m) deep. The 1982 addition of two 30-metric-ton cranes and a third position for the intermediate gate further expands the multi-ship construction capability of this dock, permitting simultaneous ship construction and repair.

A 900-metric-ton, 23-story Goliath gantry crane, one of the largest in the world, can handle completely outfitted assemblies. This crane services the graving dock and the final assembly platen and has a height of 234 feet (71 m) overall, a girder clearance of 200 feet (61 m) and a span between rail centers of 540 feet (165 m). The yard also has one 1,670-foot (509 m) outfitting berth and one 950-foot (290 m) outfitting berth, each of which is serviced by two 30-metric-ton cranes.

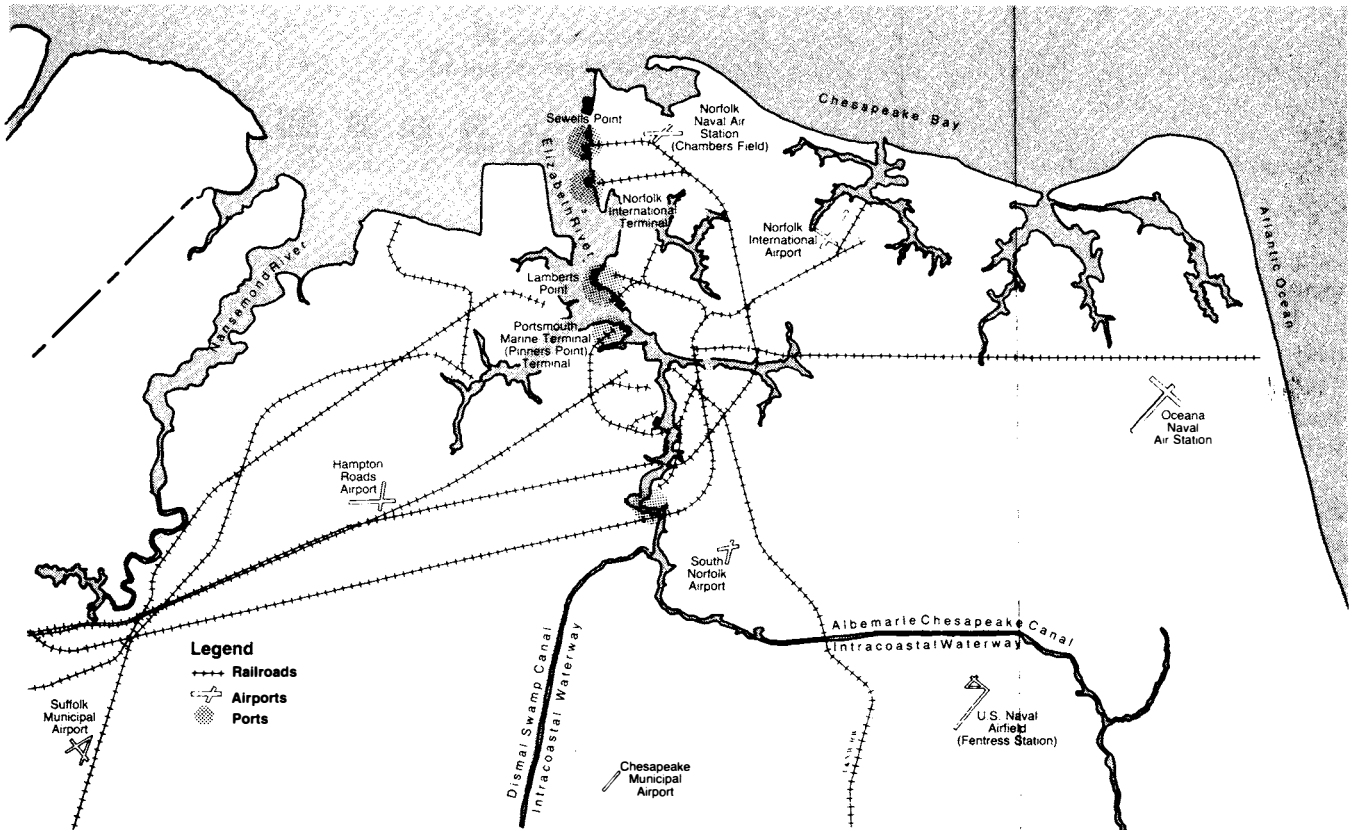
The older south yard has two inclined ship building ways; the larger of these can accommodate vessels as large as 668 feet by 93 feet (204 m x 28 m). In this yard, there are six

graving docks in operation, two of which are used for construction work and are serviced by a 310-long-ton (315 metric ton) gantry crane. The larger of these two basins can handle ships up to 1,100 feet by 136 feet (335 m x 41 m). The other four of the six graving docks in the south yard are used mainly for ship repair and overhaul work. Seven piers for outfitting and topside repair are available with a combined berthing space of approximately 12,000 linear feet (3,658 m). These piers are serviced by cranes with capacities of up to 50 tons (45 metric tons) and are supplemented by locomotive cranes and floating derricks with capacities to 67 tons (61 metric tons).

Again, according to the 1986 Maritime Administration report, Newport News has built 23 aircraft carriers, 37 nuclear-powered submarines, and 121 other surface ships for the U.S. Navy. In terms of commercial vessels, the yard has built 71 cargo ships, 85 tankers, 61 passenger ships (including the famed superliner *United States*), and more than 50 other vessels. Newport News was a pioneer in the field of jumboizing ships, and since 1957 has completed 34 such operations. As of Oct. 1, 1986, the yard was at work on three Nimitz class aircraft carriers and seven attack submarines.

FIGURE 2

Existing rail and airport facilities of Hampton Roads could be geared up to facilitate greater trade for this world-renowned port



The last commercial vessel built in the yard was the *Chemical Pioneer*, delivered in September 1983.

The yard's facilities

In July 1983, Newport News announced plans to build a new \$300-million submarine construction and repair complex. The facility will be used mainly for nuclear attack submarines and will be completed in 1988. In June this year, 125 laid-off industrial workers were re-hired, and notices to employ marine design engineers and analysts have been released.

The project will involve four new building ways, a major new construction facility under cover, new outboard ways, a 600-foot (183 m) floating drydock, and the addition of two new piers. The Ring Module Shop was completed in November 1985. In this 510-foot by 106-foot shop, individual submarine hull rings are welded together to form module-length units and structural tanks, including piping, and are installed, welded, and tested.

Some of the other facilities which are utilized in ship construction and repair, manufacturing, and industrial work are:

- A steel fabrication shop where various types of steel and other metals, ranging in thickness from one-eighth of an inch to 6 inches, up to 45 feet long weighing as much as 17.5 tons, are cut and shaped to design specifications.
- A fully equipped wood pattern shop facility.
- One of the nation's largest foundries, where steel castings weighing as much as 138,000 lbs. and alloy steels, copper, nickel, aluminum, brass, and other nonferrous alloys are poured.
- A machining complex with over 250 machines, including a 42-foot boring mill, and lathes with maximum swing of 124 inches diameter and lengths up to 68 feet between centers.
- A large pipe fabrication facility with machines capable of bending pipe up to 12 feet in diameter, horizontal boring mills, automatic welding machines, cleaning equipment, and nondestructive and hydrostatic testing capabilities.
- A large sheet-metal facility capable of manufacturing sheet-metal components required for outfitting ships and other similar applications.
- Electrical switchboard and panel shops capable of manufacturing large and small electrical switchboards and panels.
- A computer center, testing laboratories, and over 1 million square feet of inside storage, including a 106,000-square-foot automated material storage facility.

The labor force at Newport News has reached a peak of 30,000, and dropped to 28,500 a year ago, and down another 1,500 workers since.

Not nearly as large as Newport News, but considered to be among the best equipped on the East Coast, is Norfolk Shipbuilding & Drydock Corp. (Norshipco). It has three

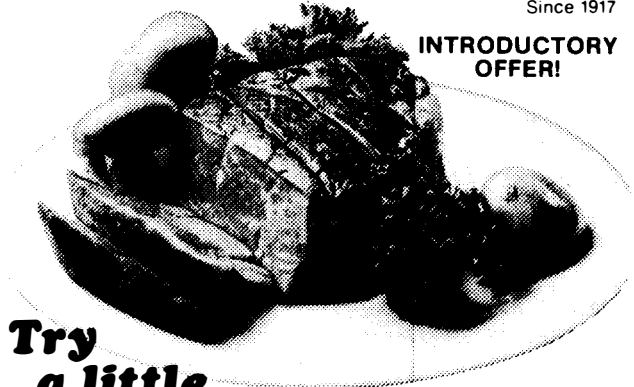
shipyards in the city of Norfolk, the Berkely, Brambleton, and Southern plants, employing about 3,200 as of June 1986. The ship repair functions include tank cleaning and coating, machinery, electrical, carpentry, steel, piping, nondestructive testing, blasting, and painting.

Norshipco has had an ongoing program of capital investment, putting a premium on expansion and modernization. One important example of this was the 1985 purchase and installation of a one-piece, steel floating drydock to replace the 40-year-old, 6-section, 12,000-ton-capacity wooden drydock in the Berkely Plant. The new drydock can accommodate a vessel up to 750 feet by 90 feet with a lifting capacity of 20,000 long tons. In 1986, Norshipco completed the installation of a large diesel engine parts repair facility known as Diesel Marine Norshipco.

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