Special Commodity Traffic on the Tennessee and Cumberland Rivers

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Data Sources

- USACE Waterborne Commerce Statistical Center (WCSC) Data Files for 2001 and 2002
  - Commodities
    - Electrical and Non-electrical Machinery
    - Manufacturers of Metals
    - Metal Structures
    - Portable Buildings
- Field interviews by Mr. Ron Riberich of TVA's Navigation Planning Staff

Total Population

- Isolated “special movements” for the nation for the years 1990-2000 by waterway
  - Found potential candidate movements of about 200-300 per year
    - Looked for size of over 50 tons
    - Promising origins or destinations from prior interviews
- Identified for the Tennessee and Cumberland Rivers for the years 2001-2002 by field interviews

Next Phase of the Research

- Tie these movements to national and regional economic development
  - Isolate the direct economic impact
  - Model impact with interregional input-output techniques

What are the movements?

- New Construction
- Replacement machinery and components
- Movement of construction equipment for maintenance of existing structures
- Maintenance not related to heavy equipment
- Manufactured devices
- Science and environmental cleanup projects
- Large recreational boats for maintenance

Who makes the movements?

- Utilities
- Construction contractors
- Large manufacturing industries
- Off-shore petroleum industry
- Federal and state agencies
- Military

USACE crane barge on the Detroit River.

What activities do the movements support?

- Power production
  - Hydro-electric power
    - Trash rack cleaning/turbine components transportation and maintenance
  - Steam fossil power
    - Steam boilers, Selective Catalytic Reduction (SCR) NO_X reduction system ductwork, cranes
  - Nuclear power
    - Steam generators, reactor vessels, cranes
  - Wind power turbines

Reactor vessel on the Columbia R.

What activities do the movements support?

- Construction contractors
  - Bridge building—oversized steel beams and decking
  - Lock and dam components—floating guidewalls, miter gate construction

USACE crane barge helps with gage building replacement at L&D 8

What activities do the movements support?

- Large manufacturing industries
  - Paper mill—dryers
  - Automobile—manufacturing stamping presses
  - Chemical—tanks and containment devices (environmental cleanup for example)

What activities do the movements support?

- Off-shore petroleum
  - Drilling rigs and platforms
  - Water and gas separation devices

What activities do the movements support?

- Military
  - Munitions
  - Vehicles—land, air, water
  - Maintenance of large engines—can not move from ports to maintenance areas by highway

What activities do the movements support?

- State and federal agencies
  - Rocket engines and boosters
  - Demolition of bridges

Loading the Saturn IV rocket booster on NASA's Delta Mariner.

Why move by barge?

- Too heavy (avoid re-engineering)
  - 100 tons is the maximum weight including the vehicle for movement on highways
  - Rail has weight limits that vary by track and bridge conditions
  - Rail has branch line restrictions that would require new construction—abandonment or light weight tracks
- Too long—turning radius
- Too wide—issue on rail and highway due to obstructions
- Too high—Tunnels for highways and rail lines and overpasses on highways

Tennessee and Cumberland Rivers

- 56 oversized movements occurred during 2001-2002
- 42 were by TVA
- TVA cranes weigh over 100 tons
  - The model 21000 crane requires 79 trucks to haul when completely disassembled but travels on the river on 3 barges

Tennessee and Cumberland Rivers

- Olmsted Dam floating guide wall
- Wings for the B1 bomber
- Disassembled airplane
- Tanks and howitzer cannons
- Two automobile manufacturing plants received manufacturing presses
  - Largest components weighed 138 tons and 150 tons each

Tennessee and Cumberland Rivers

- Ductwork materials for NO_X pollution reduction at two TVA power plants. Each unit weighs over 200 tons.
- Steam generators and pressure vessels for export built in Chattanooga. Steam generator weighed 350 tons
- Steel highway bridge deck pieces, piers, and members
- Pile driver for dock construction

Tennessee and Cumberland Rivers

- Rockets and casings moving to Cape Canaveral, Florida
- Private sector cranes, templates and plates
- Four 380 ton nuclear steam generators (68 feet tall) moved to the TVA Sequoyah Nuclear Plant (2003)
- Four 380 ton nuclear steam generators will move in 2005 to the TVA Watts Bar plant

TVA steam generators en route to Sequoyah Nuclear plant on the Tennessee River.

Tennessee and Cumberland Rivers

- Large recreational craft brought on to the Fort Loudoun pool for maintenance at the boat building and maintenance facilities at Vonore, TN on the Tellico River
- A casino building

NEXT STEPS

- Measure regional economic benefits industry by industry of navigation for both direct and indirect benefits
- Establish metrics and methods for economic analysis for special movements