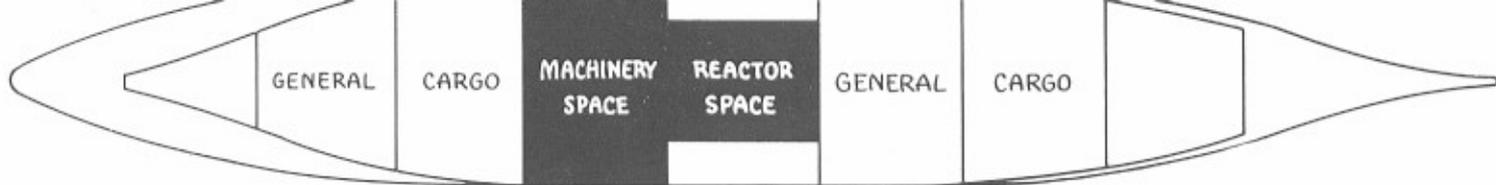
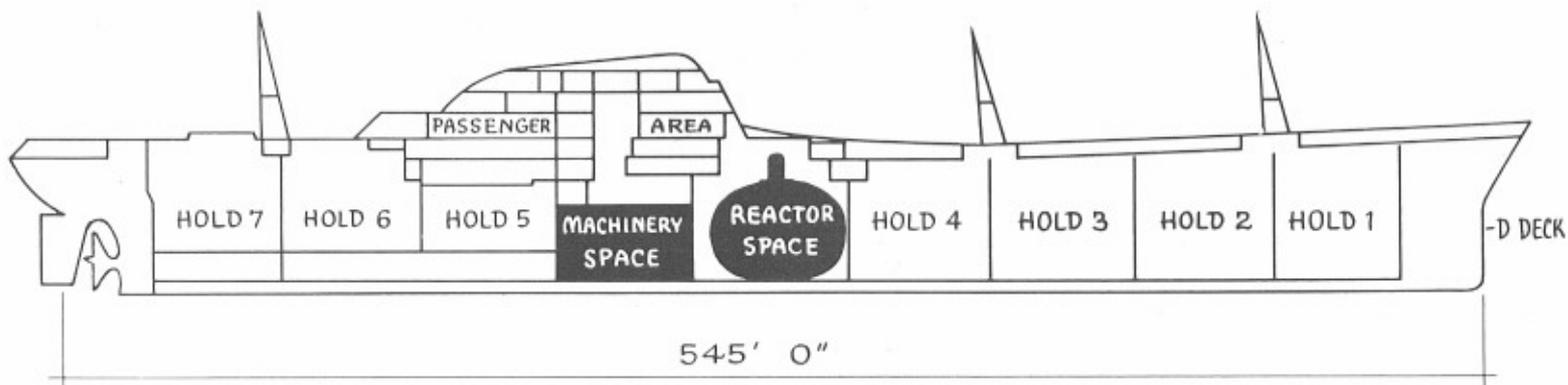


The N.S. SAVANNAH, world's first nuclear powered merchant ship, will go to sea with nary a puff of smoke. The absence of smoke stacks gives the SAVANNAH a sleek look, all because of her nuclear heart. This view shows main deck and superstructure arrangements as well as the position of the containment vessel.

Truly a queen, her vital statistics are: Passenger accommodations for 60, cargo capacity for 10,000 tons, normal cruising speed of 21 knots, normal cruising range of over 300,000 miles and 3½ years on one loading of fuel, 587 ft. long, 78 ft. beam, 29½ ft. draft, and manned by one of the most select and thoroughly trained crews ever assembled for one ship. States Marine Lines will operate the N.S. SAVANNAH, which was built by the New York Shipbuilding Corporation as a joint Atomic Energy Commission—Maritime Administration project.

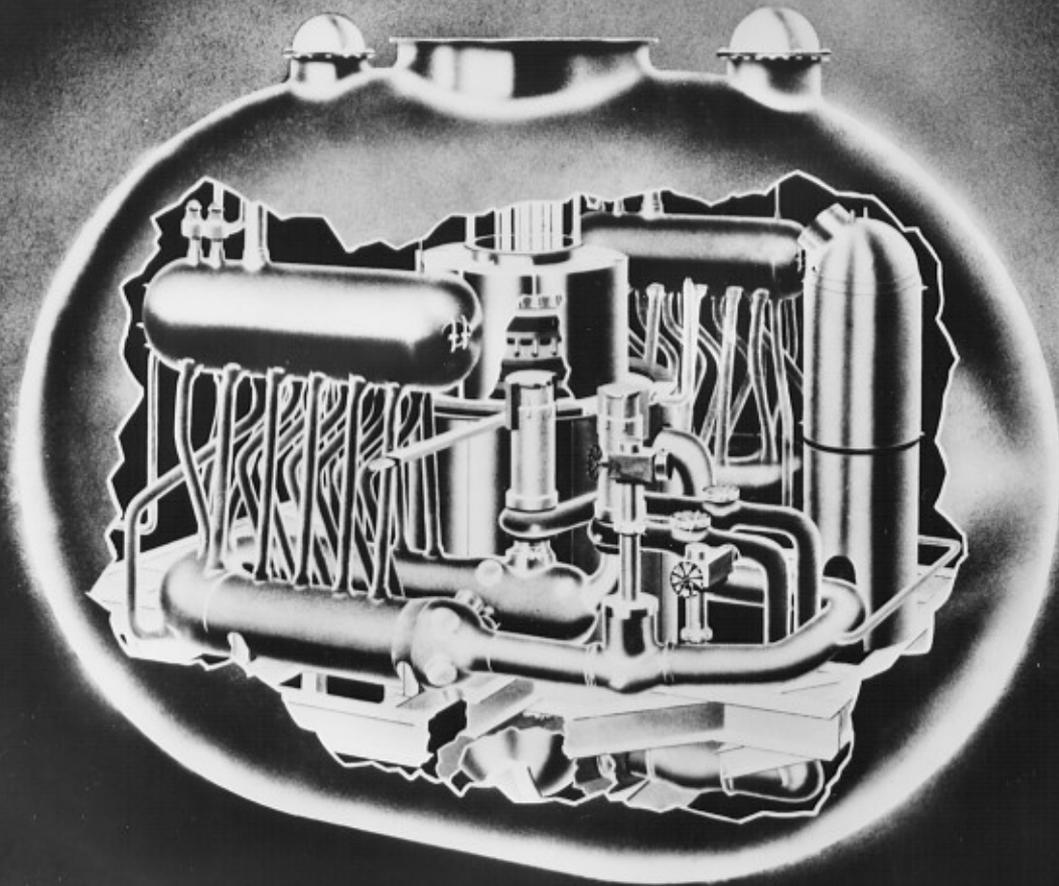


D DECK

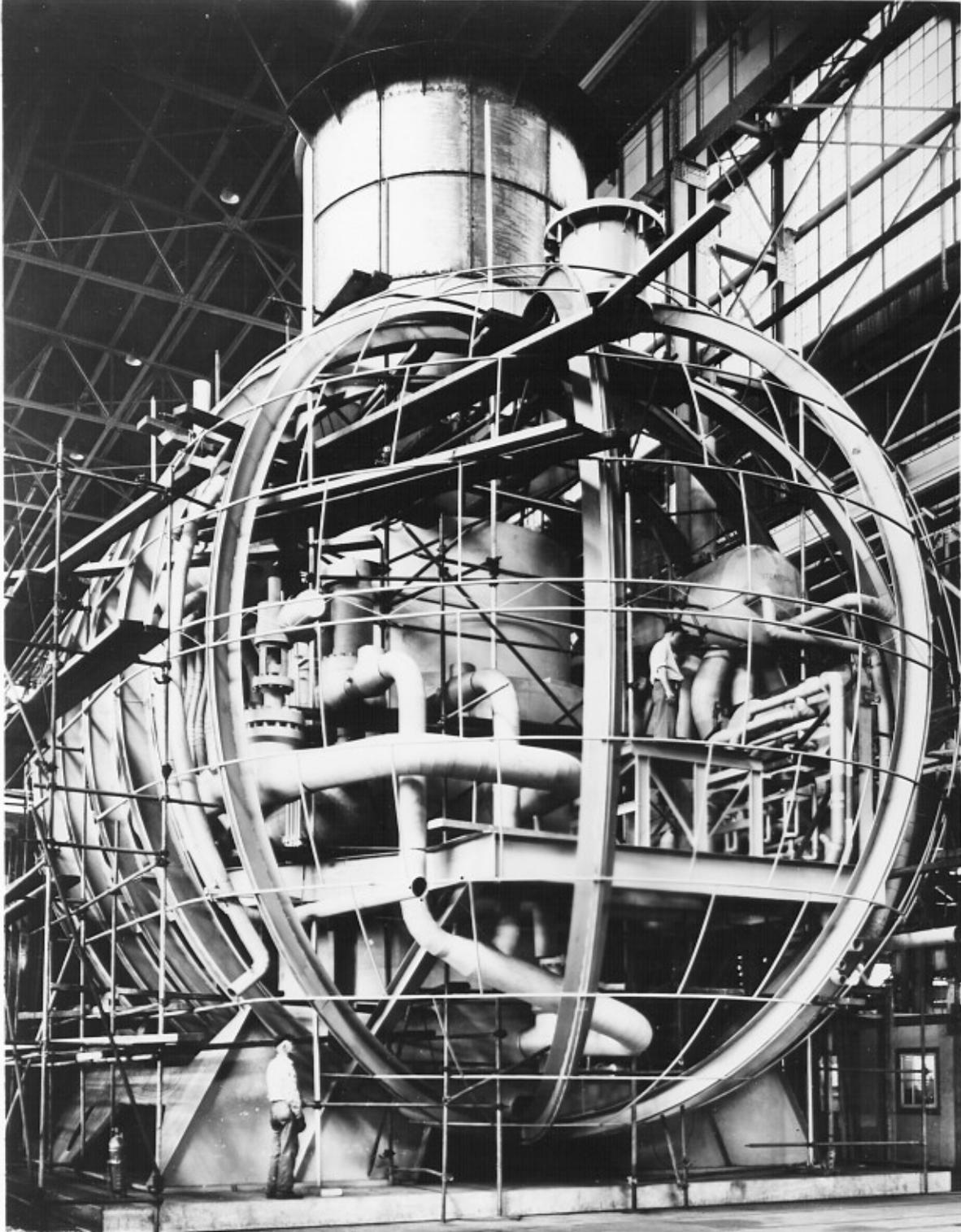


The world's first nuclear powered passenger-cargo ship, the N.S. SAVANNAH, is sub-divided as shown. The passenger area accommodates 60 passengers, and the cargo capacity is 10,000 tons. A gallery allows passengers an unrestricted view of the machinery compartment as well as the glass enclosed main control room. The ship, designed by George Sharp, Inc., naval architects, is 595.5 ft. long, 78 ft. beam, draws 29½ ft., and displaces 21,840 tons. It was built by the New York Shipbuilding Corporation. Prime contractor for the nuclear propulsion was the Babcock & Wilcox Company. The SAVANNAH is a joint project of the Atomic Energy Commission and Maritime Administration.

Figure No. 1



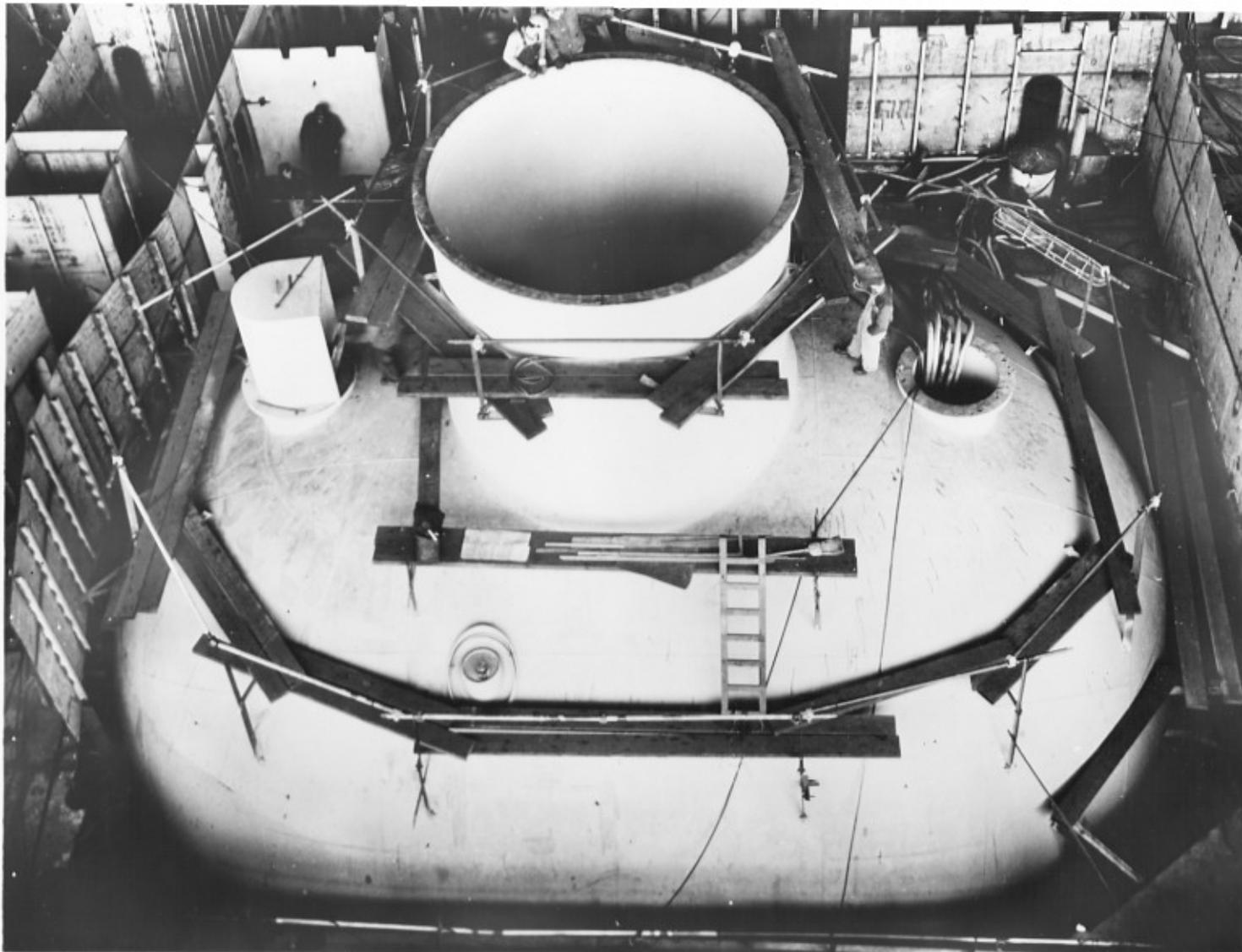
Located deep amidships of the N.S. SAVANNAH, the shielding and containmnet vessel houses the pressurized water reactor and all other primary components that will be radioactive. In the center is the reactor and its primary shield tank. The spider-like units are the heat exchangers (bottom) and steam drums (top). The bullet-shaped unit at the right is the pressurizer, which maintains the primary system at a constant pressure of 1750 psi. The primary piping is shown between the reactor, pumps and boilers. The entire containment vessel shown here is covered with a six-inch layer of lead and a six-inch layer of polyethylene. The ship was built by the New York Shipbuilding Corporation for the Atomic Energy Commission and the Maritime Administration.



#### MOCK-UP OF NUCLEAR POWER PLANT

The mock-up is a full scale model of the SAVANNAH's nuclear power plant constructed at the New York Shipbuilding Corporation, Camden, New Jersey, shipyard. The arrangement of components and piping is exactly the same as on the SAVANNAH itself, down to the smallest detail. The overall mock-up is approximately 70 feet long and 55 feet high. The containment vessel is outlined in skeleton form to permit a clear view of the internals.

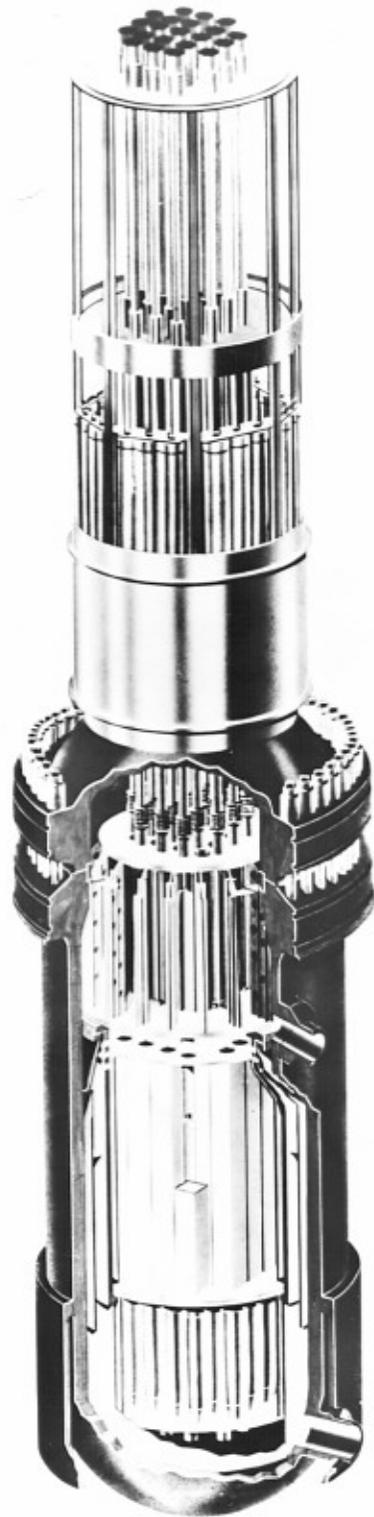
The SAVANNAH, a joint Atomic Energy Commission-Maritime Administration project, was built by New York Shipbuilding Corporation.



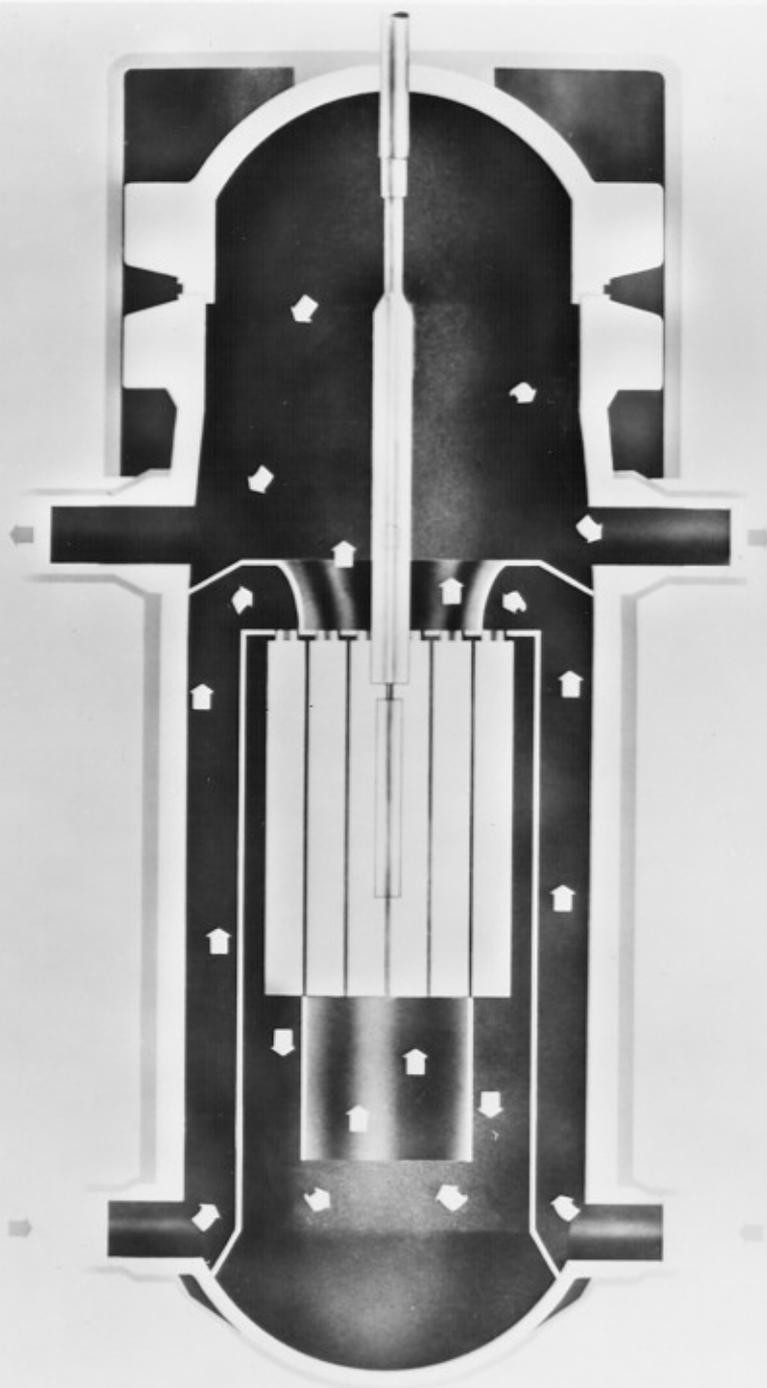
#### CONTAINMENT VESSEL DESIGN AND CONSTRUCTION

The containment vessel, 35 feet in diameter and 50.5 feet long, located in the reactor space, houses the SAVANNAH's entire reactor plant and primary cooling system. It is designed to contain all the water and steam released in the event of a mechanical failure of the pressurized water loops (maximum credible accident) and to support the lead and polyethylene shielding (about 500 tons) covering the upper half of the containment vessel.

The containment vessel was constructed by New York Shipbuilding Corporation, builders of the SAVANNAH under contract to the Atomic Energy Commission and the Maritime Administration.

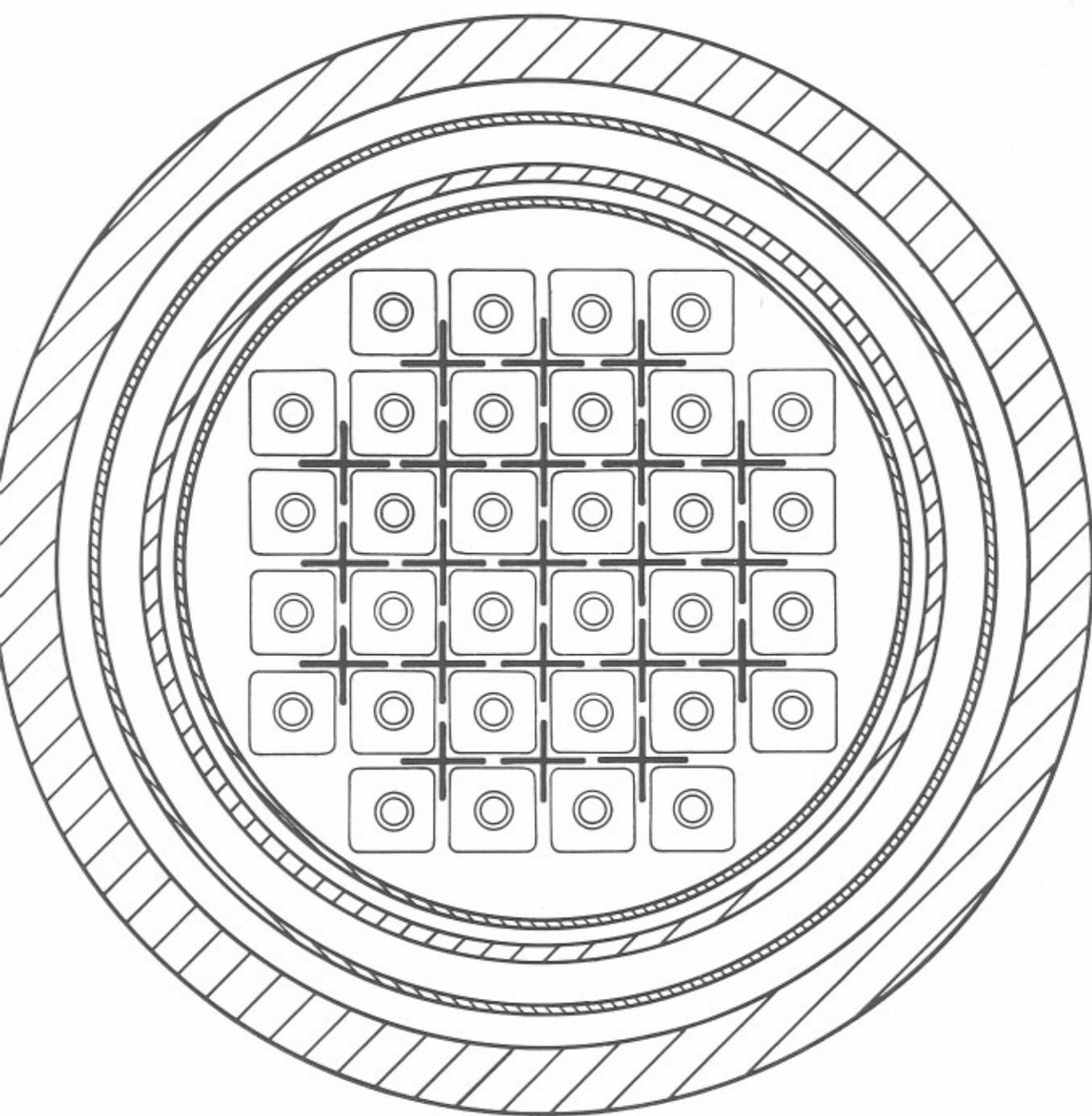


Interior view of N.S. SAVANNAH's pressurized water reactor, designed and built by the Babcock and Wilcox Company. The atomic fuel is housed in the square-shaped fuel elements shown in the central region of the reactor vessel. The rods that extend up through the vessel head control the fission process, and chain reaction. This will be one of the most advanced, yet conservatively designed pressurized water reactors in existence. Built by the New York Shipbuilding Corporation, the SAVANNAH is a joint Atomic Energy Commission-Maritime Administration project.



SCHEMATIC SECTION OF REACTOR

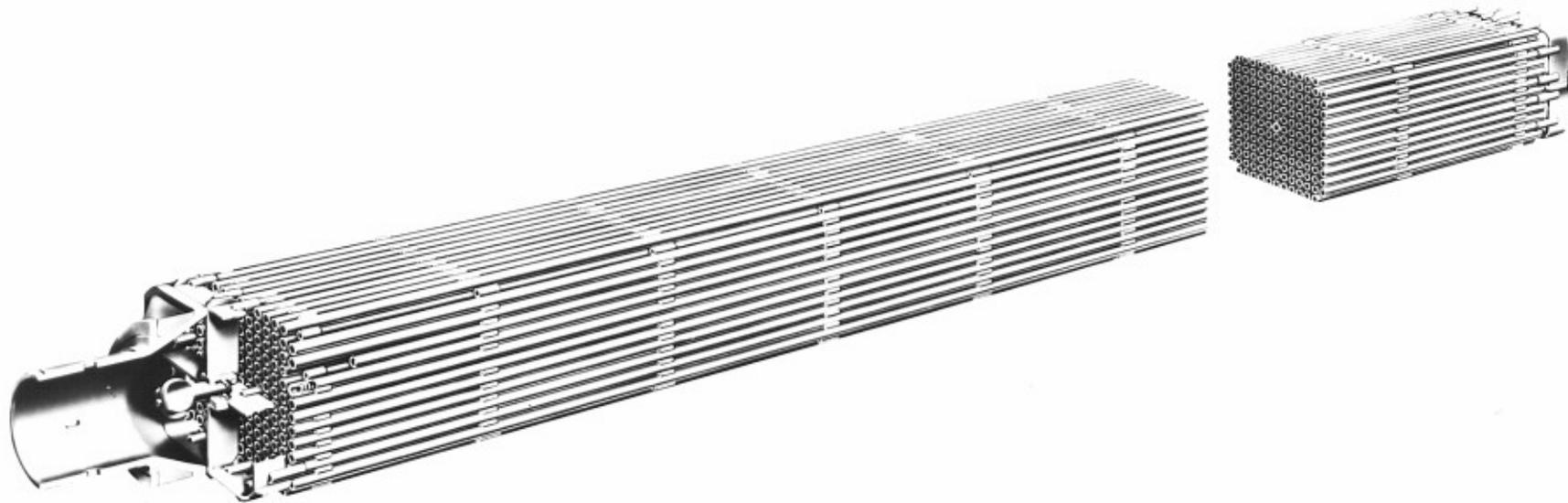
Eight million pounds of the purest water will flow through the N.S. SAVANNAH's pressurized water reactor every hour, following the path shown here. The water will enter at 1,750 psi pressure and be heated to 520 degrees F before leaving through the upper nozzles. Even though the temperature is 520 degrees F, it will not boil because of the great pressure. In the heat exchanger, reactor water flows through a series of pipes and transfers its heat to secondary system water that is flowing around the pipes. This water turns to steam which drives the steam turbines. It is all part of the nuclear propulsion system of the N.S. SAVANNAH, the world's first atomic passenger-cargo vessel that will sail the seas on an "Atoms for Peace" mission before going into regular service. The nuclear power plant was designed and built by the Babcock & Wilcox Company. The ship was constructed by the New York Shipbuilding Corporation under the joint Atomic Energy Commission-Maritime Administration project.



## TOP VIEW OF REACTOR

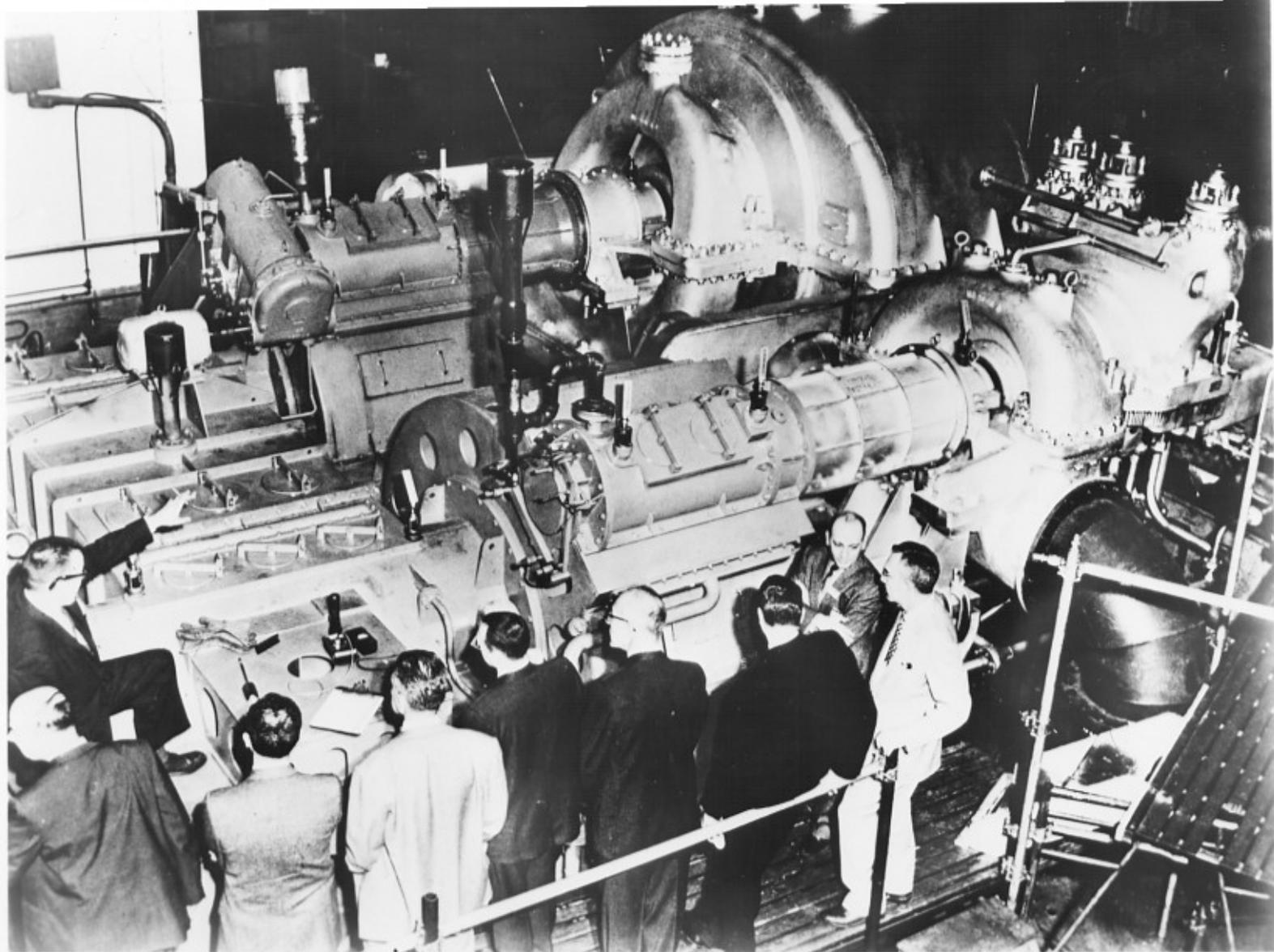
Internal cross-section of the N.S. SAVANNAH's reactor vessel, showing the spacing and arrangement of the fuel elements and control rods. The 21 cruciform control rods are in heavy black. When in the full down position they effectively stop neutrons from bombarding the atoms in neighboring elements. When they are raised the permitted bombardment of atoms between fuel elements sustains a chain reaction that heats the water flowing through the elements. The pressurized water reactor system was designed and built by the Babcock & Wilcox Company. The SAVANNAH, a joint Atomic Energy Commission-Maritime Administration project, was built by the New York Shipbuilding Corporation.

Figure No. 5



## **N M S R** **Fuel Element**

One of 32 fuel element assemblies in the Babcock & Wilcox Company pressurized water reactor of the N.S. SAVANNAH. Each fuel element assembly contains four bundles of 41 fuel rods. The fuel is uranium oxide enriched to 4.2 and 4.6 percent U-235. The active fuel is contained in the central 60 inches of the 72-inch bundle length. The fuel is received in the form of powder, and compressed into pellets. There are approximately 650,000 such pellets in the 5,248 fuel rods that make up the reactor core. The SAVANNAH, a joint Atomic Energy Commission-Maritime Administration project, was built by the New York Shipbuilding Corporation.



Shown under test at the DeLaval Steam Turbine Company, this steam turbine will propel the N.S. SAVANNAH along the world's water routes at a steady 21 knots. Atomic heat will produce the steam, representing the world's first application of nuclear energy in a merchant vessel. Carrying a crew of about 110, and with accommodations for 60 passengers and 10,000 tons of cargo, the N.S. SAVANNAH will be able to operate for 3½ years on one fuel loading. Under normal operation, the power plant will deliver a steady 20,000 shaft horsepower, which can be stepped up to 22,000 shaft horsepower when desired. The ship was built by the New York Shipbuilding Corporation under a joint Atomic Energy Commission-Maritime Administration project.



N.S. SAVANNAH, SAMPLE STATEROOM

Decorative partition, with its glass and honeycomb grille divides room into sitting and sleeping areas, giving the effect of a suite. Stateroom has two beds, and sofa-berth at rear to accommodate a 3rd person. Private bathroom adjoins room. Sample stateroom designed by Jack Heaney and Associates to obtain the most practical arrangement and pleasing appearance possible.

The SAVANNAH, built by New York Shipbuilding Corporation is a joint project of the Atomic Energy Commission and the Maritime Administration.



