

SEQUOYAH

OWNER, OPERATOR & ARCHITECT-ENGINEER
Tennessee Valley Authority

MAIN CONTRACTOR
Westinghouse Electric Corporation

LOCATION
N. Chattanooga, Tenn.

TYPE
Pressurized Water Reactor (two units)

SCHEDULE	unit 1	unit 2
Construction start	June 1970	Nov. 1970
Criticality	Oct. 1973	March 1974
Commercial operation	April 1974	Dec. 1974

all data listed below refers to one reactor-turbine unit, the values for each of the two units being identical

POWER
Net electrical output 1 125 MW(e)
Gross electrical output 1 171 MW(e)
Gross thermal output 3 411 MW(th)

REACTOR CORE
Core diameter (equivalent) 133.7 in (3.40 m)
Core height (active) 144 in (3.66 m)
Number of fuel assemblies 193
Fuel pin lattice pitch 0.563 in (14.3 mm)
Average thermal output 217 200 Btu/ft³h (589 200 kcal/m³h)
Maximum thermal output 579 600 Btu/ft³h (1 573 200 kcal/m³h)
Weight of fuel as UO₂ 215 400 lb (97.6 te)

FUEL ASSEMBLIES
Fuel material UO₂
Pellet diameter 0.366 in (9.29 mm)
Clad material Zr-4
Clad thickness 0.024 in (0.61 mm)
Pin diameter 0.422 in (10.7 mm)
Number of pins per assembly 204
Maximum fuel central temperature 4 140 °F (2 282 °C)
Maximum clad surface temperature 657 °F (247 °C)
Feed enrichment (equilibrium) 3.2%
Fuel discharge burn-up (equilib.) 31 000 MWd/t

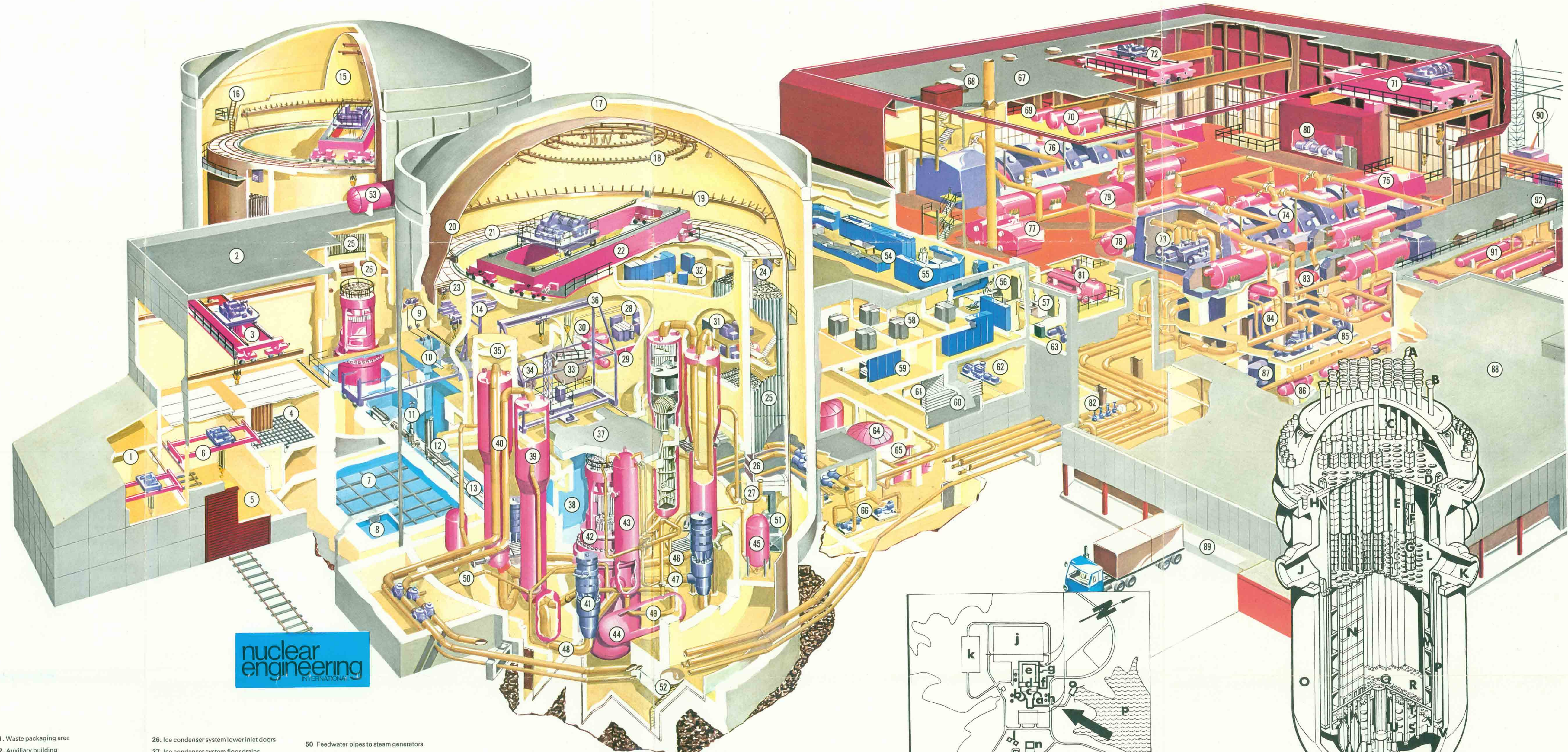
CONTROL RODS
Neutron absorber Ag, In, Cd
Cladding material S.S., type 304
Number full length 53
part length 8
Shape Rod cluster
Length of poison section 142.7 in (3.62 m)

PRIMARY COOLANT SYSTEM
Type Forced circulation
Operating pressure 2 250 psia (158 kg/cm²)
Reactor inlet temperature 545 °F (285 °C)
Reactor outlet temperature 610 °F (321 °C)
Coolant pumps 4
Total reactor flow 134 x 10⁶ lb/h (61 x 10⁶ kg/h)

REACTOR PRESSURE VESSEL
Inside diameter 173 in (4.39 m)
Inside height 495 in (12.6 m)
Wall thickness (core region) 8.625 in (219 mm)
Material ASTM A-508 Class II
Design pressure 2 500 psia (176 kg/cm²)
Design temperature 650 °F (343 °C)

CONTAINMENT BUILDING
Type Double (steel vessel, concrete shield)
Pressure suppression Ice condenser
Design pressure 10.8 psi (0.75 kg/cm²)
Inside diameter (steel vessel) 115 ft (34.4 m)
Inside height (steel vessel) 156 ft (47.5 m)

TURBOGENERATOR
Rating 1 220 MW(e)
Speed 1 800 rev/min
TSV pressure 782 psi (55 kg/cm²)
TSV temperature 514 °F (268 °C)



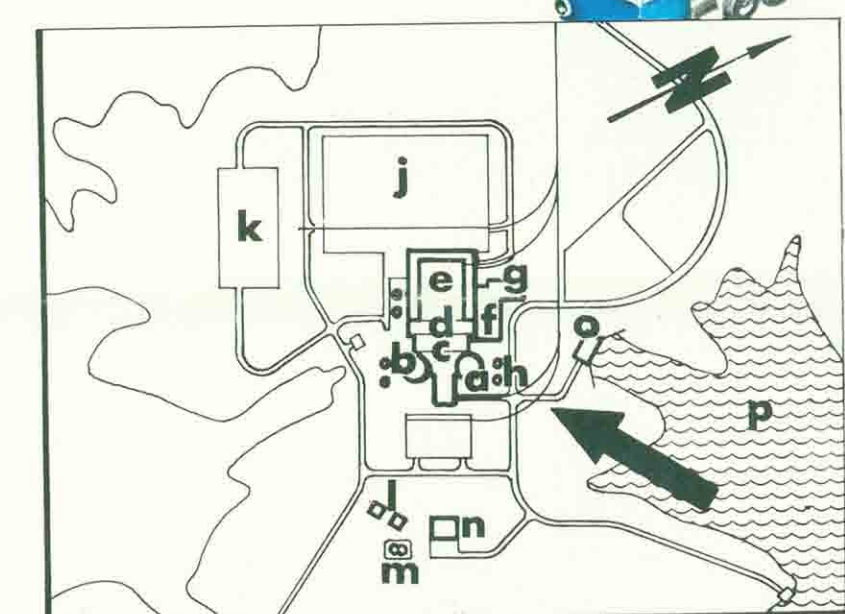
nuclear
engineering
INTERNATIONAL

1. Waste packaging area
2. Auxiliary building
3. Auxiliary building crane
4. New fuel storage area
5. Railroad delivery area
6. Waste handling crane
7. Spent fuel pit
8. Fuel cask loading
9. Hoist for fuel transfer system
10. Fuel transfer canal - spent fuel pit gate
11. Fuel transfer canal valve
12. Fuel transfer conveyor end-feeding frame reactor 2
13. Fuel canal to reactor 1
14. Spent fuel pit bridge and hoist
15. Reactor building 2
16. Access ladder to dome
17. Reactor building 1
18. Containment spray pipes
19. Crane collector rail
20. Steel containment vessel
21. Ice condenser top deck
22. Reactor building polar crane
23. Ice condenser system bridge crane
24. Ice condenser system air handling units
25. Ice baskets

26. Ice condenser system lower inlet doors
27. Ice condenser system floor drains
28. Ice machines
29. Ice storage bin
30. Borax solution mixing tanks
31. Package chillers
32. Control rod drive equipment room
33. Equipment hatch - reactor building
34. Personnel hatch - reactor building
35. Steam generator containment
36. Manipulator crane
37. Control rod drive missile shield
38. Gate to refuelling cavity
39. Steam generators (4)
40. Main steam pipes
41. Reactor coolant pumps (4)
42. Pressure Vessel - unit 1
43. Pressurizer
44. Pressurizer relief tank
45. Accumulators (4)
46. Reactor - steam generator main coolant piping
47. Pump - reactor main coolant piping
48. Steam generator-pump main coolant piping
49. Pressurizer surge pipe

50. Feedwater pipes to steam generators
51. Ventilation fan
52. Access to sump beneath reactor
53. Raw water tanks
54. Main control room
55. Unit 1 control boards
56. Shift engineer's office
57. Kitchen and lunch room
58. 480 V shut-down board transformers
59. 480 V shut-down boards
60. Air intake housing
61. Filter units
62. Auxiliary building lighting board
63. Mechanical equipment room
64. Hold-up tanks (2)
65. Gas decay tanks
66. Component cooling pumps
67. Turbine building
68. Fresh air intakes
69. Gland seal water tank
70. Portable water tanks
71. Turbine building crane - turbine 1
72. Turbine building crane - turbine 2
73. H.P. turbine - unit 1
74. L.P. turbines - unit 1

75. Generator - unit 1
76. Turbine - unit 2
77. Auxiliary boilers
78. Reheaters - turbine 1
79. Reheaters - turbine 2
80. Heating and ventilating equipment
81. Turbine oil tank
82. Feedwater control station - reactor 1
83. Heaters - low pressure
84. Turbine by-pass pipes
85. Feedwater pump turbines
86. Feedwater pump turbine condenser
87. Condenser
88. Service building
89. Service building loading dock
90. Switch yard
91. Heaters - high pressure
92. Exhaust fan housing



- Map**
- a. Reactor building 1
 - b. Reactor building 2
 - c. Auxiliary building
 - d. Control building
 - e. Turbine building
 - f. Service building
 - g. Office building
 - h. Primary water and refuelling tanks
 - j. 500 kV switchyard
 - k. 161 kV switchyard
 - l. Cooling towers (auxiliary)
 - m. Fuel oil storage
 - n. Diesel generator building
 - o. Intake structure
 - p. Chickamauga reservoir

- Reactor**
- A. Control rod drive mechanism head adaptors
 - B. Instrumentation ports
 - C. Thermal sleeves
 - D. Upper support plate
 - E. Support column
 - F. Control rod drive shaft
 - G. Control rod guide tube
 - H. Internals support ledge
 - J. Inlet nozzle
 - K. Outlet nozzle
 - L. Upper core plate
 - M. Baffle and former
 - N. Fuel assemblies
 - O. Reactor vessel
 - P. Thermal shield
 - Q. Access port
 - R. Lower core plate
 - S. Core support
 - T. Diffuser plate
 - U. Lower support column
 - V. Radial supports
 - W. Instrumentation thimble guides

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