

THE WORLD'S REACTORS No.50

OCONEE NUCLEAR POWER STATION

DESIGNER & CONTRACTOR

Overall project management:

Duke Power Company

Nuclear steam supply system:

Babcock & Wilcox Company

OWNER OPERATOR

Duke Power Company, Charlotte, North Carolina

LOCATION

Clemson, South Carolina

TYPE

Pressurized water reactor, three units

Information listed below refers to one reactor-turbine unit unless otherwise stated

CONSTRUCTION SCHEDULE

	Unit 1	Unit 2	Unit 3
Construction start	Nov. 1967	Sept. 1968	Oct. 1968
Reactor critical	Dec. 1970	Dec. 1972	Jan. 1973
Commercial operation	May 1971	May 1972	June 1973

CAPACITY

Gross generation 922 MW

Net electrical output 886 MW(e)

Overall station net efficiency 34.5%

REACTOR CORE

Thermal output 2 568 MW(t) (8 765 × 10⁶ Btu/h)

Core diameter (equivalent) 128 in (3.25 m)

Core height (active) 144 in (3.66 m)

Number of fuel assemblies 177

Fuel rod lattice pitch 0.568 in (14.4 mm)

Average thermal output 9.656 kW/ft (172 W/cm)

Maximum thermal output 17.63 kW/ft (537 W/cm)

Weight of fuel as UO₂ 207 486 lb (94.1 t)

FUEL ASSEMBLIES

Fuel material UO₂ sintered pellets

Pellet diameter 0.370 in (9.40 mm)

Pellet length 0.70 in (17.8 mm)

Clad material Zircaloy 4

Clad thickness 0.0265 in (0.673 mm)

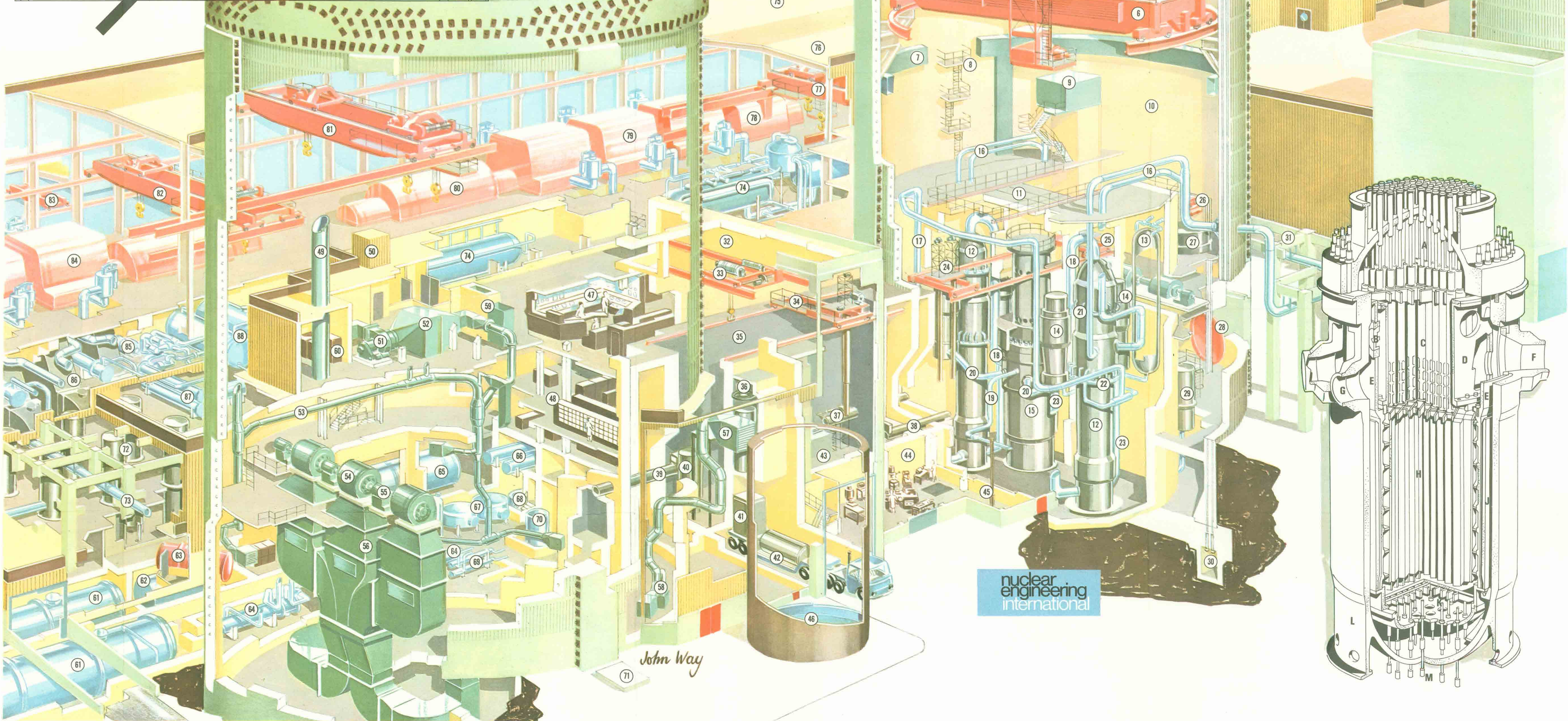
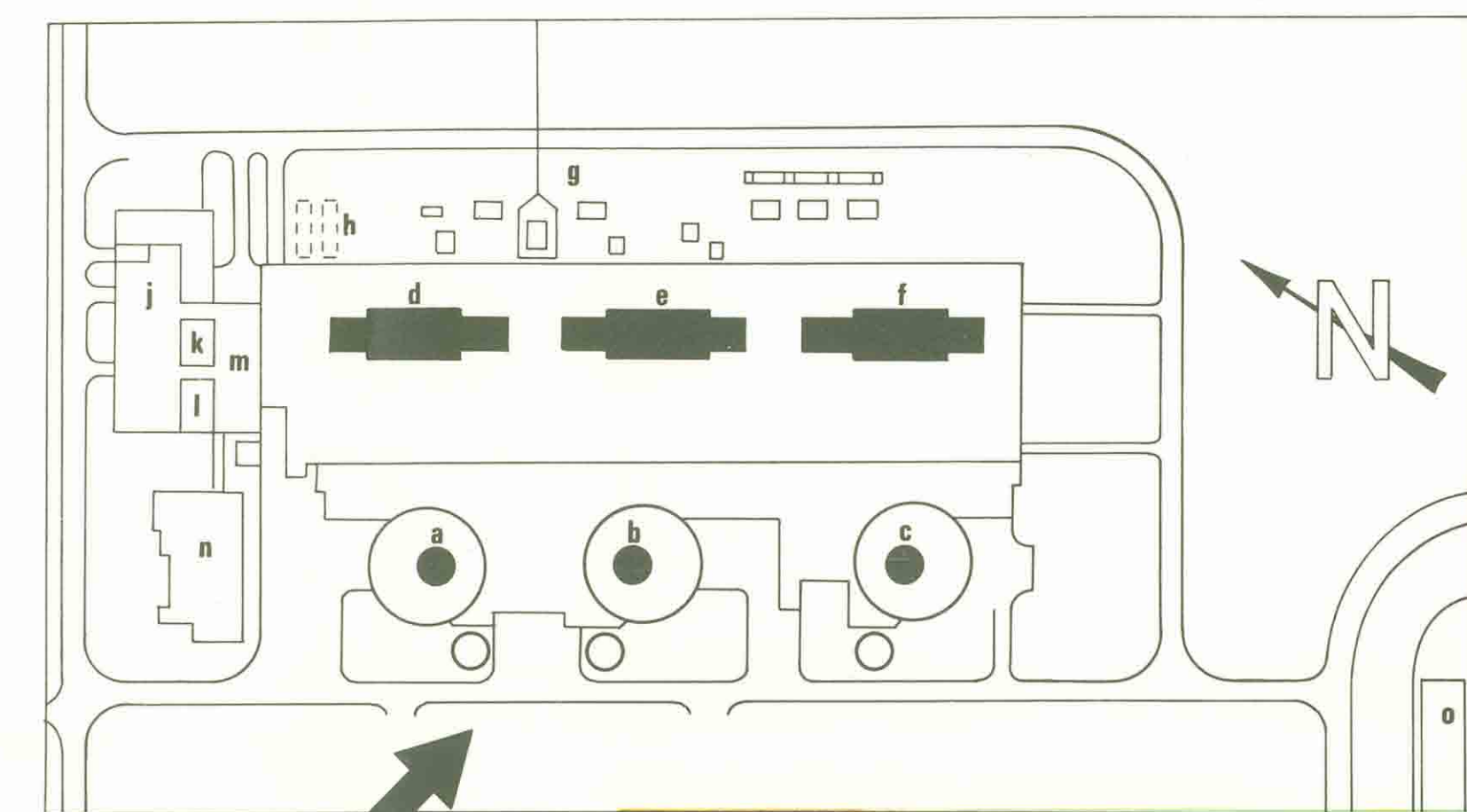
Rod diameter 0.430 in (10.9 mm)

Number of rods per assembly 208

Maximum fuel central temp. 4 250 °F (2 344 °C)

Maximum clad surface temp. 654 °F (346 °C)

	Unit 1	Unit 2	Unit 3
Feed enrichment	2.10%	2.65%	2.25%
Fuel discharge burnup	9 600 MWd/te	14 250 MWd/te	9 600 MWd/te



Key to drawing

1. Reactor building No. 1
2. Reactor building No. 2
3. Reactor building No. 3
4. Reactor building spray headers
5. Reactor building spray headers
6. Polar crane
7. Ventilation duct
8. Access to polar crane
9. Elevator machinery room

10. Reactor hall
11. Removable shielding concrete
12. Steam generators
13. Pressurizer
14. Reactor coolant pumps
15. Reactor vessel
16. Main steam pipes
17. Feedwater pipe
18. Reactor—steam generator pipes
19. Core flooding pipes
20. Pump—reactor return pipes

21. Auxiliary feedwater spray header
22. Feedwater spray header
23. Steam generator—pump return pipes
24. Main fuel handling bridge
25. Auxiliary fuel handling bridge
26. Equipment hatch lifting hoist
27. Reactor head storage stand
28. Equipment hatch

29. Core flooding tanks
30. Lower tendon access gallery
31. Main steam pipes support structures
32. Fuel handling building
33. Cask handling crane
34. Auxiliary fuel handling bridge
35. Fuel pool
36. Cask wash-down area
37. Fuel transfer mechanism
38. Fuel transfer tubes—reactor No. 2

39. Fuel transfer tubes—reactor No. 1
40. Fuel cask
41. Auxiliary cooling package
42. Cask and transporter
43. Fuel storage area
44. Hot machine shop
45. Control rod drive test area
46. Borated water storage tank
47. Control room
48. Electrical equipment room

49. Reactor building vent
50. Elevator shaft
51. Purge exhaust fan unit
52. Purge exhaust filters
53. Reactor building purge exhaust ducts
54. Reactor building cooling unit fans
55. Reactor building cooling unit motors
56. Reactor building coolers
57. Reactor building purge inlet unit
58. Reactor building purge

59. Inlet system ducts
60. Cable and duct shafts
61. Radioactive gas monitoring equipment
62. Reactor coolant bleed hold-up tanks
63. Concentrated boric acid storage tank
64. Personnel airlocks
65. Decay heat coolers
66. Recirculating cooling water tank
67. Waste gas tanks
68. L.P. boric acid tanks

69. Spent resin tank
70. Seal return coolers
71. Let down filters
72. Tendon gallery access
73. Heaters
74. Main steam pipe—reactor No. 1 tanks
75. Upper surge tanks
76. Turbine building
77. Heater bay crane
78. H.P. unit—turbine No. 2
79. L.P. units turbine No. 2
80. Generator No. 2

81. Turbine building crane
82. Turbine building auxiliary crane
83. Pump aisle crane
84. Turbine—reactor No. 1
85. Feedwater turbines
86. Condensers
87. Condensate cooler
88. Condensate storage tanks

Key to site plan

- a. Reactor No. 1
- b. Reactor No. 2
- c. Reactor No. 3
- d. Turbine No. 1
- e. Turbine No. 2
- f. Turbine No. 3
- g. Transformer yard
- h. Fuel oil store
- i. Warehouse
- j. Electrical shop
- k. Supply room

Key to reactor

- A. Control rod drive actuators
- B. Internals vent valve
- C. Control rod guide tubes
- D. Upper plenum
- E. Core support shield
- F. Outlet nozzle
- G. Inlet nozzle

Key to fuel assembly

- J. Thermal shield
- K. Flow baffle
- L. Support skirt
- M. In-core instrumentation nozzles

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