

The World's Reactors No. 59

# ATLANTIC GENERATING STATION

## Offshore Nuclear Power Plant

**OWNER, OPERATOR**  
Public Service Electric & Gas Company of New Jersey

**MAIN CONTRACTOR**  
Offshore Power Systems

**LOCATION**  
2.8 miles (4.6km) offshore near Little Egg Harbor, New Jersey, U.S.A.

**TYPE**  
Pressurized Water Reactor (two units)

**SCHEDULE**

	Atlantic Generating Station	
	Unit 1	Unit 2
Commence Tow	July 1979	April 1980
Commercial Operation	April 1980	November 1980

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

**POWER**

Net electrical output	1150 MW(e)
Gross electrical output	1211 MW(e)
Gross thermal output	3425 MW(th)

**REACTOR CORE**

Core diameter (nominal)	133.7 in (3.40m)
Core height (active)	144 in (3.66m)
Number of fuel assemblies	193
Fuel pin lattice pitch	0.563 in (14.3mm)
Average thermal output	217200 Btu/ft <sup>2</sup> h (589200 k cal/m <sup>2</sup> h)
Maximum thermal output	521300 Btu/ft <sup>2</sup> h (1414801 k cal/m <sup>2</sup> h)
Weight of fuel as UO <sub>2</sub>	190225 lb (86.27te)

**FUEL ASSEMBLIES**

Fuel Material	UO <sub>2</sub>
Pellet diameter	0.366 in (9.29mm)
Clad material	Zircaloy 4
Clad thickness	0.024 in (0.61mm)
Pin diameter	0.422 in (10.7mm)
Number of pins per assembly	204
Maximum fuel central temperature	4140°F (2282°C)
Maximum clad surface temperature	657°F (247°C)
Feed enrichment (equilibrium)	3.2%
Fuel discharge burn-up (equilibrium)	31000 MWd/t

**CONTROL RODS**

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

**PRIMARY COOLANT SYSTEM**

Type	Forced circulation
Operating pressure	2250 psia (158kg/cm <sup>2</sup> )
Reactor inlet temperature	557.3°F (291.8°C)
Reactor outlet temperature	616.9°F (325.0°C)
Coolant pumps	4
Total reactor flow	142.1 x 10 <sup>6</sup> lb/h (64.4 x 10 <sup>6</sup> kg/h)

**REACTOR PRESSURE VESSEL**

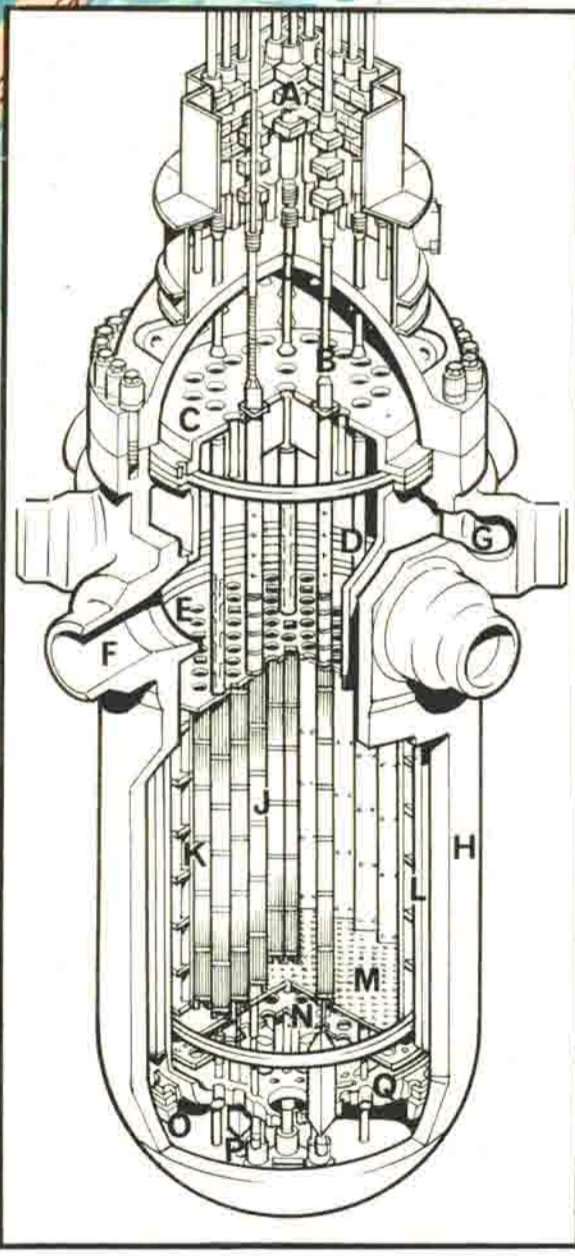
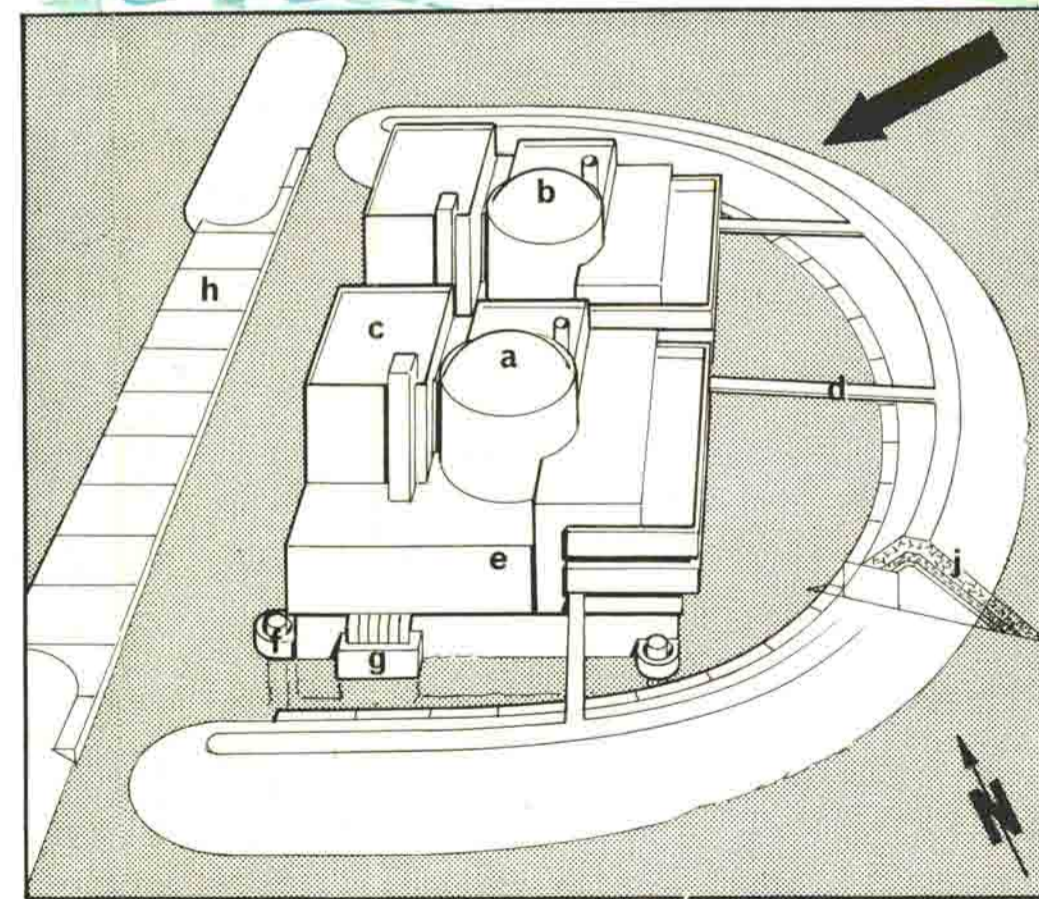
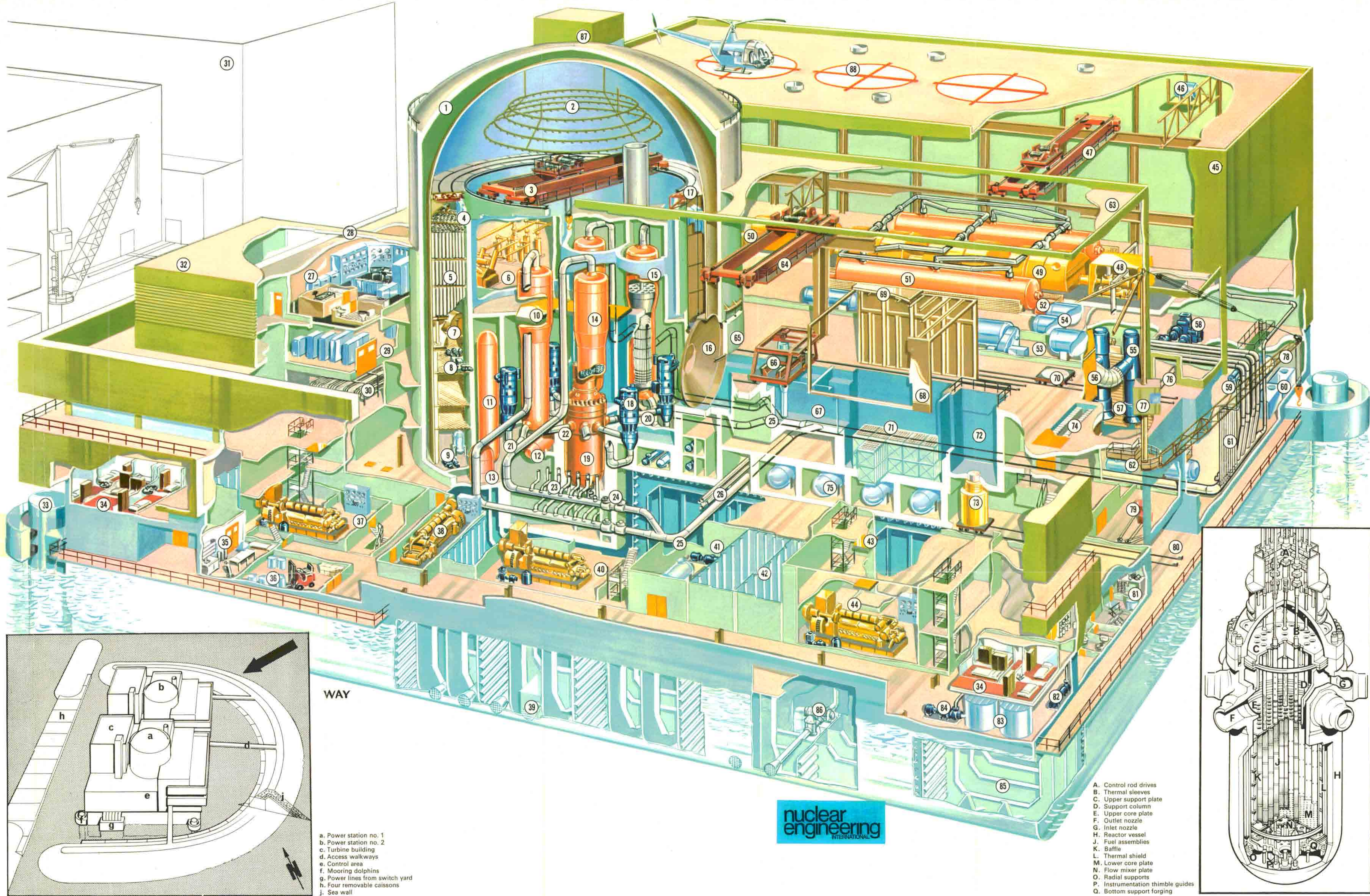
Inside diameter	173 in (4.39m)
Inside height	435 in (12.6m)
Wall thickness (core region)	8.625 in (219mm)
Material	ASTMA-508 Class II
Design pressure	2500 psia (176kg/cm <sup>2</sup> )
Design temperature	650°F (343°C)

**CONTAINMENT BUILDING**

Type	Double (steel vessel, concrete shield)
Pressure suppression	Ice condenser
Design pressure	15.0 psi (1.05kg/cm <sup>2</sup> )
Inside diameter (steel vessel)	120 ft (40.9m)
Inside height (steel vessel)	162 ft (55.2m)

**TURBOGENERATOR**

Rating	1220 MW(e)
Speed	1800 rev/min
TSV pressure	980 psi (68.9kg/cm <sup>2</sup> )
TSV temperature	542.1°F (283.4°C)



WAY

a. Power station no. 1  
b. Power station no. 2  
c. Turbine building  
d. Access walkways  
e. Control area  
f. Mooring dolphins  
g. Power lines from switch yard  
h. Four removable caissons  
j. Sea wall

A. Control rod drives  
B. Thermal sleeves  
C. Upper support plate  
D. Support column  
E. Upper core plate  
F. Outlet nozzle  
G. Inlet nozzle  
H. Reactor vessel  
J. Fuel assemblies  
K. Baffle  
L. Thermal shield  
M. Lower core plate  
N. Flow mixer plate  
O. Radial supports  
P. Instrumentation thimble guides  
Q. Bottom support forging

- |                                    |  |  |  |                                       |  |
|------------------------------------|--|--|--|---------------------------------------|--|
| 1. Containment, reactor no. 2      | 17. Equipment hatch lifting gear                   | 31. Power station no. 1                      | 47. Turbine building crane               | 63. Fuel handling building            | 79. Dock crane winches                               |
| 2. Containment spray rings         | 18. Primary circulating pumps                      | 32. Clean mechanical equipment area          | 48. High pressure turbine                | 64. Fuel handling building crane      | 80. Dock loading area                                |
| 3. Containment polar crane         | 19. Reactor vessel                                 | 33. Mooring dolphin (3)                      | 49. Low pressure turbine (3)             | 65. Containment equipment door shield | 81. Elevator   |
| 4. Air handling units              | 20. Pump to reactor main coolant piping            | 34. Sleeping quarters                        | 50. Generator and exciter                | 66. Manipulator crane                 | 82. Miscellaneous drain pump and tank                |
| 5. Ice condenser baskets           | 21. Steam generator to pump main coolant piping    | 35. Rescue equipment room                    | 51. Moisture separator and reheater (2)  | 67. Refueling canal                   | 83. Domestic water tank (2)                          |
| 6. Transformer park                | 22. Reactor to steam generator main coolant piping | 36. Paint stores                             | 52. Reheater level control tank          | 68. Spent fuel pit missile shield     | 84. Domestic water chlorinator                       |
| 7. Personnel hatch                 | 23. Steam line relief valves                       | 37. Safeguard compartment no. 3              | 53. House boiler                         | 69. Sliding enclosure                 | 85. Trim tank (4)                                    |
| 8. Detector drive unit             | 24. Reactor cavity hatch cover                     | 38. Emergency diesel generator (4)           | 54. Feedwater heaters                    | 70. Fuel cask transfer trolley        | 86. Auxiliary water pump (2)                         |
| 9. Boron injection tanks and pumps | 25. Main steam line                                | 39. Emergency raw water pump intake (4)      | 55. Condenser cooling pump (6)           | 71. Spent fuel pit                    | 87. Elevator to helicopter deck                      |
| 10. Reactor cavity hatch cover     | 26. Feedwater pipes                                | 40. Safeguard compartment no. 2              | 56. Condenser (3)                        | 72. Spent fuel pit cask loading area  | 88. Helicopter landing deck on turbine building roof |
| 11. Pressuriser                    | 27. Control room                                   | 41. Sodium hypochlorite generating unit      | 57. Condenser cooling water intake gates | 73. Spent fuel cask                   |  |
| 12. Pressuriser relief tank        | 28. Main control board                             | 42. Refuelling water storage tanks (2)       | 58. Main feedwater pump (2)              | 74. New fuel store                    |  |
| 13. Accumulator (4)                | 29. Computer room                                  | 43. Access to compartment no. 1              | 59. Lubricating oil cooler               | 75. Waste gas decay tank (8)          |  |
| 14. Steam generator (4)            | 30. Cable pull area                                | 44. Safeguard compartment no. 1              | 60. Lubricating oil storage tanks        | 76. Rail track to turbine building    |  |
| 15. Steam generator containment    |  | 45. Turbine building                         | 61. Dump steam lines                     | 77. Dock crane control cab            |  |
| 16. Equipment hatch                |  | 46. Turbine building fire main pressure tank | 62. High pressure heater drain tank      | 78. Dock crane                        |  |