ULCHIN 3 & 4

KEY TO POWER STATION CUTAWAY

1 Turbine building
2 250 ton bridge crane
3 25 ton bridge crane
4 Air handling unit
5 Special tool room and workshop
6 Heater bay surge tank
7 Condensate polishing cation bed vessels and filters
8 Generator
9 Low pressure turbines
10 High pressure turbine
11 Deaerator storage tank
12 Deaerator
13 Moisture separator reheater
14 Low pressure feedwater heaters
15 High pressure feedwater heaters
16 Feedwater pump turbine exhaust duct
17 Motor driven feedwater pump
18 Turbine driven feedwater pump
19 Feedwater booster pump
20 Bus ducts
21 Combined intermediate valve
22 Condenser
23 Low pressure feedwater heater
24 Main steam stop valves
25 Condenser water outlets
26 Heater bay
27 HVAC room
28 Filter room ducting
29 Diesel generator exhaust
30 Main steam
31 Feedwater
32 Unit heater
33 Primary auxiliary building
34 Tank room unit heater
35 Battery racks
36 CCTV control unit
37 Battery charger
38 Diesel generator
39 Emergency diesel generator control room
40 Load centre
41 Diesel fuel storage tank
42 Shutdown cooling heat exchanger
43 Load centre
44 Post accident sample pump
45 Fire water storage tanks
46 Pipe tunnel
47 Stair well
48 Main steam vents
49 Component cooling surge tank
50 Dumb waiter
51 Control room
52 Computer room
53 Electrical equipment room
54 Access control building
55 Containment building
56 Containment spray system
57 Polar crane
58 HVAC duct
59 RCFC unit
60 CEA change platform
61 Personnel access
62 CEA elevator drive
63 Refuelling pool
64 Pressuriser
65 Control element assembly air handling unit
66 Safety injection tank
67 Steam generator
68 Incore instrumentation seal table
69 Reactor coolant pump
70 Reactor vessel
71 Reactor support structure
72 Incore instrumentation guide tube
73 Reactor coolant piping hot leg
74 Reactor coolant piping cold leg
75 RCP lubrication oil collection tank
76 Refuelling machine
77 CEA elevator
78 Fuel transfer carriage and upender in containment building
79 Fuel transfer tube
80 Emergency personnel lock
81 Fuel building
82 Swing gate
83 Spent fuel handling machine
84 Cask handling crane
85 Spent fuel storage pool
86 New fuel elevator
87 New fuel storage pit
88 New fuel inspection area
89 Cask loading pit
90 Refuelling canal
91 Fuel transfer carriage and upender in fuel building
92 Shipping cask
93 Cask decontamination pit
94 Spent fuel pool cooling heat exchangers
95 Spent fuel pool pump room
96 Fuel loading and unloading bay
97 Refuelling water tank
98 Fuel building air handling unit
99 Reactor make-up water tank
100 Secondary auxiliary building

MAIN TECHNICAL DATA

REACTOR

Type	PWR
Core thermal output	2815 MWt
Design pressure	2500 lb/in^2(a)
Design temperature	650°F (343.3°C)
Reactor vessel volume	3821.9 ft^3

REACTOR COOLANT PUMPS

Number	4
Pump speed	1190 RPM
Motor type	AC Induction
Voltage	13 200 V
Rated total dynamic head	345 ft
Rated flowrate	85 400 gpm
Frequency	60 Hz

FUEL

No. of fuel assemblies	177
Fuel weight	189.9 x 10^3 lb
No. of fuel rods	41 132
Core diameter	123 in
Clad material	Zircaloy-4
Clad thickness	0.025 in

STEAM GENERATOR

Type	Vertical U-tube
No. of units	2
Primary/secondary pressure	2250/1070 lb/in^2
Coolant volume each SG	1834 ft^3 (51.9 m^3)
Tube thickness	0.042 in (1.07 mm)
Steam quality	99.75%
Feedwater temperature	450°F (232.2°C)

REACTOR COOLANT SYSTEM

No. of loops	2
Coolant flow rate	121.5 x 10^6 lb/h
Design thermal power	2825 MWt
Reactor inlet temperature	564.5°F (295.8°C)
Reactor outlet temperature	621.2°F (327.3°C)
Normal operating pressure	2250 lb/in^2

CONTROL RODS

No. of control assemblies	65 (FS) + 8 (PS)
No. of rods per assembly	12 and 4 (FS) + 4 (PS)
Material	B_4C and Inconel 625

CONTAINMENT

Type	Prestressed cylindrical concrete with steel liner
Inside diameter	144 ft
Height	219 ft
Normal operating temperature	< 120°F (48.9°C)
Liner thickness	0.25 in

TURBINE

Number	1 (double flow high pressure) + 3 (double flow low pressure)
Type	6 flow, tandem compound
RPM	1800

GENERATOR

Number	1
Type	Direct driven (Conductor cooled)
Voltage	22 kV, 3 phase
Frequency	60 Hz
Net electric output	1000 MWe

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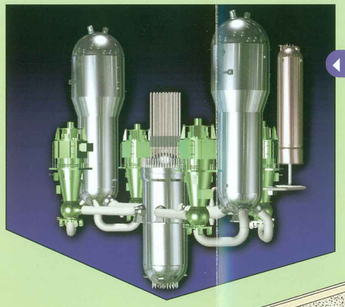
한국전력공사
KOREA ELECTRIC POWER CORPORATION
Korea Electric Power Corporation: Utility, Total Project Management

한국전력기술주식회사 KOREA POWER ENGINEERING COMPANY, INC.
Korea Power Engineering Company, Inc: NSSS System Designer & Architect Engineering

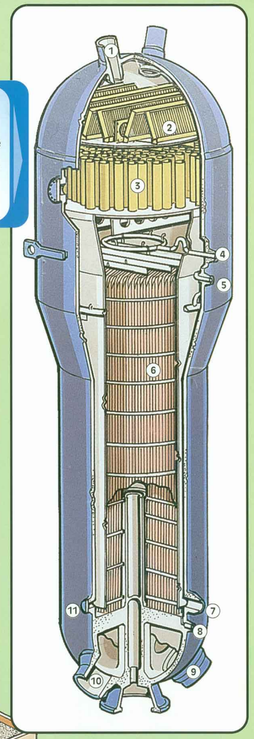
KOREA HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.
Hanjung: NSSS & Turbine-Generator Supplier, Construction (Installation)

한국원전연료주식회사 KOREA NUCLEAR FUEL CO., LTD.
Korea Nuclear Fuel Co., Ltd: Fuel Design & Supplier

동아건설산업주식회사 DONG AH CONSTRUCTION INDUSTRIAL CO., LTD.
Dong Ah Construction Industrial Co., Ltd: Construction (Civil/Arch & Installation)

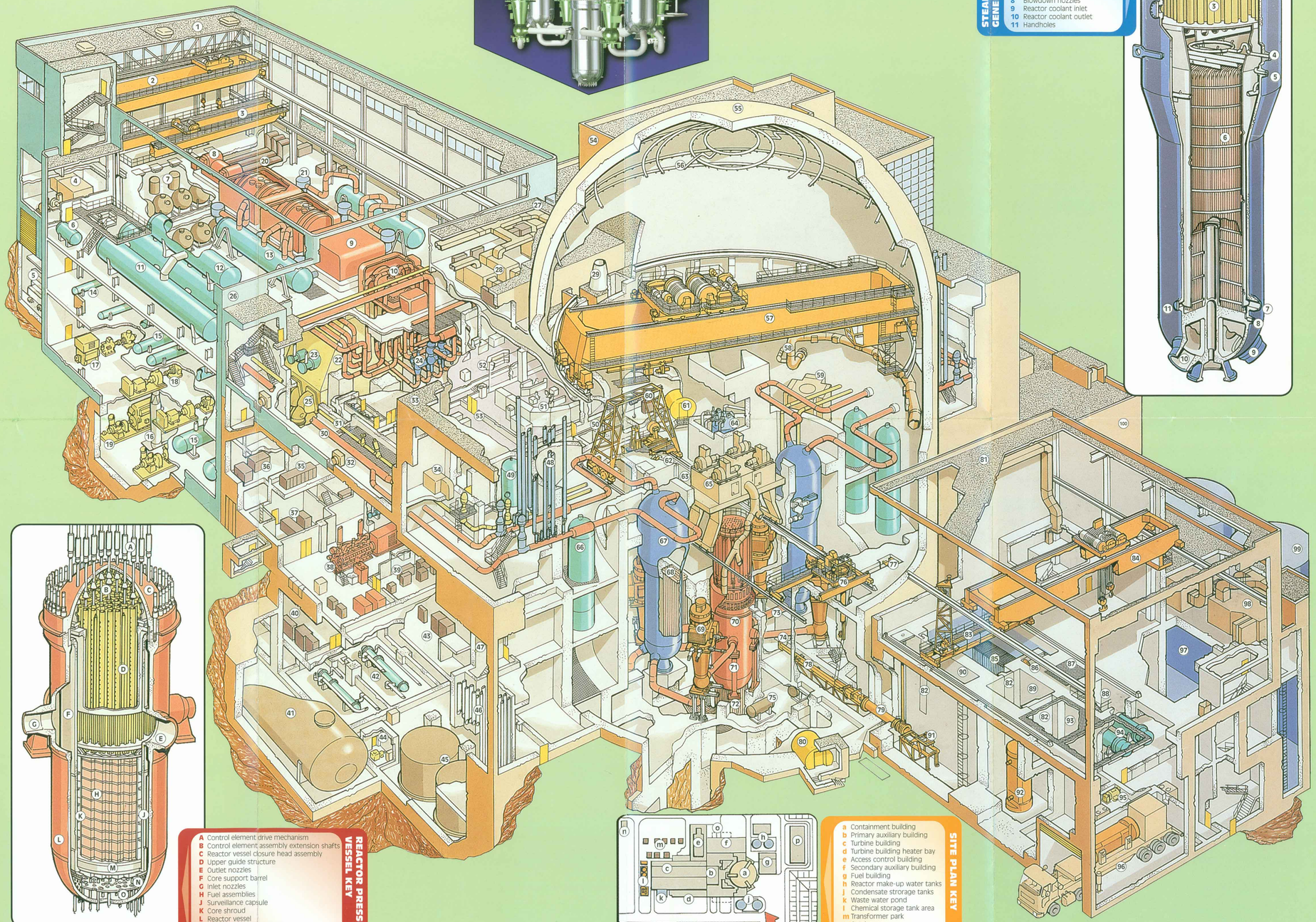


REACTOR COOLANT SYSTEM



STEAM GENERATOR KEY

1 Steam outlets
2 Dryers
3 Separators
4 Recirculation nozzle
5 Downcomer feedwater nozzle
6 Tube bundle
7 Economiser feedwater nozzle
8 Blowdown nozzles
9 Reactor coolant inlet
10 Reactor coolant outlet
11 Handholes



REACTOR PRESSURE VESSEL KEY

A Control element drive mechanism
B Control element assembly extension shafts
C Reactor vessel closure head assembly
D Upper guide structure
E Outlet nozzles
F Core support barrel
G Inlet nozzles
H Fuel assemblies
J Surveillance capsule
K Core shroud
L Reactor vessel
M Lower support structure
N Flow skirt
O Bottom head nozzles

SITE PLAN KEY

a Containment building
b Primary auxiliary building
c Turbine building
d Turbine building heater bay
e Access control building
f Secondary auxiliary building
g Fuel building
h Reactor make-up water tanks
j Condensate storage tanks
k Waste water pond
l Chemical storage tank area
m Transformer park
n Gatehouse
o Diesel fuel storage tanks
p Radwaste building