**ATTACHMENT C**

Marked-Up Current Dresden Unit 2 and Quad Cities Unit 2
Technical Specifications

FOR INFORMATION ONLY



## 5.0 DESIGN FEATURES

### 5.1 Site

Dresden Unit 2 is located at the Dresden Nuclear Power Station which consists of a tract of land of approximately 953 acres located in the northeast quarter of the Morris 15-minute quadrangle (as designated by the United States Geological Survey), Goose Lake Township, Grundy County, Illinois. The tract is situated in portions of Sections 25, 26, 27, 34, 35, and 36 of Township 34 North, Range 8 East of the Third Principal Meridian.

TSup 5.1 STS 5.1

### 5.2 Reactor

A. The core shall consist of not more than 724 fuel assemblies

TSup 5.3.A STS 5.3.1

B. The reactor core shall contain 177 cruciform-shaped control rods. The control material shall be boron carbide powder ($B_4C$) compacted to approximately 70% of theoretical density, or Hafnium metal.

TSup 5.3.B STS 5.3.2

### 5.3 Reactor Vessel

The reactor vessel shall be as described in Table 4.1.1 of the SAR. The applicable design codes shall be as described in Table 4.1.1 of the SAR.

TSup 5.4 STS 5.4

### 5.4 Containment

A. The principal design parameters and applicable design codes for the primary containment shall be as given in Table 5.2.1 of the SAR.

TSup 5.2.A STS 5.2.1

B. The secondary containment shall be as described in Section 5.3.2 of the SAR and the applicable codes shall be as described in Section 12.1.1.3 of the SAR.

TSup 5.2.C STS 5.2.3

C. Penetrations to the primary containment and piping passing through such penetrations shall be designed in accordance with standards set forth in Section 5.2.2 of the SAR and the applicable codes shall be as described in Section 12.1.1.3 of the SAR.

TSup 5.2 STS 5.2

### 5.5 Fuel Storage

A. A maximum of 320 new fuel assemblies are permitted to be stored in the new fuel storage facility. New fuel storage reactivity limits are specified in Section 3.10.G.1.

B. Fuel storage is permitted in up to 33 high density fuel storage racks. This will allow a storage capacity of 3537 fuel assemblies. Spent fuel storage reactivity limits are specified in Section 3.10.G.2.

TSup 5.6.C STS 5.6.3



3696a
3124A

FOR INFORMATION ONLY



DESIGN FEATURES (Cont'd.)

5.6 Seismic Design

The reactor building and all contained engineered safeguards are designed for the maximum credible earthquake ground motion with an acceleration of 20 per cent of gravity. Dynamic analysis was used to determine the earthquake acceleration, applicable to the various elevations in the reactor building.

# FOR INFORMATION ONLY

QUAD CITIES
DPR-30

## 5.0 DESIGN FEATURES

TSup 5.1
STS 5.1

### 5.1 Site

The Quad Cities Station, which consists of a tract of land of approximately 404 acres, is located about 3 miles north of Cordova, Illinois, Rock Island County, Illinois. The tract is situated in portions of Sections 7, 8, 17, and 18 of Township 20 North, Range 2 East.

### 5.2 Reactor

TSup 5.3.A
STS 5.3.1

A. The core shall consist of not more than 724 fuel assemblies.

TSup 5.3.B
STS 5.3.2.

B. The reactor core shall contain 177 cruciform-shaped control rods. The control material shall be boron carbide powder ($B_4C$) compacted to approximately 70% of theoretical density or hafnium metal.

### 5.3 Reactor Vessel

TSup 5.4
STS 5.4

The reactor vessel shall be as described in Table 4.1.1 of the SAR. The applicable design codes shall be as described in Table 4.1.1 of the SAR.

### 5.4 Containment

TSup 5.2.A
STS 5.2.1

A. The principal design parameters and applicable design codes for the primary containment shall be as given in Table 5.2.1 of the SAR.

TSup 5.2.C
STS 5.2.3

B. The secondary containment shall be as described in Section 5.3.2 of the SAR, and the applicable codes shall be as described in Section 12.1.1.3 of the SAR.

TSup 5.2
STS 5.2

C. Penetrations to the primary containment and piping passing through such penetrations shall be designed in accordance with standards set forth in Section 5.2.2 of the SAR.

### 5.5 Fuel Storage

A. The new fuel storage facility shall be such that the $K_{eff}$ dry is less than 0.90 and flooded is less than 0.95.

TSup 5.6.A
STS 5.6.1

B. The $K_{eff}$ of the spent fuel storage pool shall be less than or equal to 0.95.

### 5.6 Seismic Design

The reactor building and all contained engineered safeguards are designed for the maximum credible earthquake ground motion with an acceleration of 24% of gravity. Dynamic analysis was used to determine the earthquake acceleration application to the various elevations in the reactor building.

**ATTACHMENT D**

Marked-Up Draft Revision 4 of the BWR/4 Standard Technical Specifications

FOR INFORMATION ONLY

## 5.0 DESIGN FEATURES

### 5.1 SITE

#### EXCLUSION AREA

5.1.1 The exclusion area shall be as shown in Figure 5.1.1-1.

#### LOW POPULATION ZONE

5.1.2 The low population zone shall be as shown in Figure 5.1.2-1.

Radioactive Gaseous Effluents
5.1.C Information regarding radioactive gaseous effluents shall be located in the OFFSITE DOSE CALCULATION MANUAL.

Radioactive Liquid Effluents
5.1.D Information regarding radioactive liquid effluents shall be located in the OFFSITE DOSE CALCULATION MANUAL.

### 5.2 CONTAINMENT

The drywell is a steel structure composed of a spherical lower portion, a cylindrical middle portion, and a hemispherical top head.

#### CONFIGURATION

5.2.1 The primary containment is a (steel lined (post-tensioned) (reinforced) concrete structure consisting of a drywell and suppression chamber. The drywell is a steel-lined (prestressed) (reinforced) concrete vessel in the shape of a truncated cone on top of a water filled suppression chamber and is attached to the suppression chamber through a series of downcomer vents. The drywell has a minimum free air volume of (221,513) cubic feet. The suppression chamber has an air region of (166,400) cubic feet and a water region of (142,160) cubic feet).

158,230 → 116,300 to 112,800

The drywell → 116,300 to 119,800

#### DESIGN TEMPERATURE AND PRESSURE

5.2.2 The primary containment is designed and shall be maintained for:

a. Maximum internal pressure (45) psig. (62)

b. Maximum internal temperature: drywell (340)°F. (281)
suppression pool (220)°F.

c. Maximum external pressure (5) psig. drywell 2psig suppression pool 1psig (281)

(d. Maximum floor differential pressure: (25) psid, downward.
(5) psid, upward.)

#### SECONDARY CONTAINMENT

5.2.3 The secondary containment consists of the (Reactor Building, the Reactor Building recirculation fan room, the equipment access structure and a portion of the main steam tunnel) and has a minimum free volume of (2,650,000) cubic feet.

5,760,000

FOR INFORMATION ONLY

This figure shall consist of a map of the site area and provide at a minimum, the information described in Section (2.1.2) of the FSAR and meteorolgical tower location.

EXCLUSION AREA

FIGURE 5.1.1-1

FOR INFORMATION ONLY

This figure shall consist of a map of the site area showing the Low Population Zone boundary. Features such as towns, roads and recreational areas shall be indicated in sufficient detail to allow identification of significant shifts in population distribution within the LPZ.

LOW POPULATION ZONE

FIGURE 5.1.2-1

# FOR INFORMATION ONLY

DESIGN FEATURES

## 5.3 REACTOR CORE

### FUEL ASSEMBLIES

5.3.1 The reactor core shall contain (764) fuel assemblies with each fuel assembly containing (62) fuel rods and (two) water rods clad with Zircaloy -2. Each fuel rod shall have a nominal active fuel length of (150) inches. The initial core loading shall have a maximum average enrichment of (1.90) weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum average enrichment of ( ) weight percent U-235.

Each assembly consists of a matrix of Zircaloy clad fuel rods with an initial composition of natural or slightly enriched Uranium dioxide as fuel material and water rods, Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff-approved codes and methods, and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

724

### CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain (185) control rod assemblies, each consisting of a cruciform array of stainless steel tubes containing (143) inches of boron carbide, $B_4C$, powder surrounded by a cruciform shaped stainless steel sheath.

177

cruciform shaped

The control material shall be boron carbide powder ($B_4C$) and/or hafnium metal. The control rod assembly shall have a nominal axial absorber length of 143 inches.

## 5.4 REACTOR COOLANT SYSTEM

### DESIGN PRESSURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

a. In accordance with the code requirements specified in Section (5.2) of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of:

1. (1250) psig on the suction side of the recirculation pump.
2. (1650) psig from the recirculation pump discharge to the outlet side of the discharge shutoff valve.
3. (1550) psig from the discharge shutoff valve to the jet pumps.

1175 at 565°F

1450 at 575°F

1325 at 580°F

c. For a temperature of (575)°F.

### VOLUME

5.4.2 The total water and steam volume of the reactor vessel and recirculation system is approximately (22,400) cubic feet at a nominal steam dome saturation temperature of (528)°F.

14626

68

5.5 METEOROLOGICAL TOWER LOCATION [INTENTIONALLY BLANK]

5.5.1 The meteorological tower shall be located as shown on Figure 5.1.1-1.

5.6 FUEL STORAGE

CRITICALITY

5.6.1 The spent fuel storage racks are designed and shall be maintained with:

a. A $k_{eff}$ equivalent to less than or equal to 0.95 when flooded with unborated water, ~~(which includes a conservative allowance of (2.6)% delta k/k for uncertainties)~~ (including all calculational uncertainties and biases) as described in Section (4.3) of the FSAR.

b. A nominal (6.625) inch center-to-center distance between fuel assemblies placed in the storage racks.

5.6.1.2 The $k_{eff}$ for new fuel for the first core loading stored dry in the spent fuel storage racks shall not exceed (0.98) when (aqueous foam moderation) is assumed.

DRAINAGE

5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation (603' 4").

CAPACITY

5.6.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than (1120) fuel assemblies.

5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.7.1 The components identified in Table 5.7.1-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7.1-1.

TABLE 5.7.1-1

COMPONENT CYCLIC OR TRANSIENT LIMITS

| COMPONENT | CYCLIC OR TRANSIENT LIMIT | DESIGN CYCLE OR TRANSIENT |
|---|---|---|
| Reactor | (120) heatup and cooldown cycles | (70)°F to (560)°F to (70)°F |
| | (80) step change cycles | Loss of (all) feedwater heaters |
| | (180) reactor trip cycles | (100)% to (0)% of RATED THERMAL POWER |
| | (40) hydrostatic pressure and leak tests | Pressurized to $\geq$ (930) and $\leq$ (1250) psig |