

5.0 MAJOR DESIGN FEATURES

5.1 Site Features

The Cooper Nuclear Station site is located in Nemaha County, Nebraska, on the west bank of the Missouri River, at river mile 532.5. This part of the river is referred to by the Corps of Engineers as the Lower Brownville Bend. Site coordinates are approximately 40° 21' north latitude and 95° 38' west longitude. The site consists of 1351 acres of land owned by Nebraska Public Power District. About 205 acres of this property is located in Atchison County, Missouri, opposite the Nebraska portion of the station site. The land area upon which the station is constructed is crossed by the Missouri River on the east and is bounded by privately owned property on the north, south, and west. At the west site boundary, a county road and Burlington Northern Railroad spur pass the site.

The reactor (center line) is located approximately 3600 feet from the nearest property boundary. No part of the present property shall be sold or leased by the applicant which would reduce the minimum distance from the reactor to the nearest site boundary to less than 3600 feet without prior NRC approval.

The protected area is formed by a seven foot chain link fence which surrounds the site buildings.

5.2 Reactor

- A. The reactor shall contain 548 fuel assemblies. Each assembly shall consist of a matrix of Zircalloy clad fuel rods with an initial composition of slightly enriched uranium dioxide (UO_2) as fuel material. Fuel assemblies shall be limited to those fuel designs approved by the NRC for use in BWRs.
- B. The core shall contain 137 cruciform-shaped control rods. The control material shall be boron carbide powder (B_4C) compacted to approximately 70 percent theoretical density or hafnium in control rod designs specifically approved by the NRC for use in BWRs.
- C. Lead Test Assembly (LTA) control blades and fuel assemblies of different design than described above may be installed under the provisions of 10CFR50.59 in conjunction with vendor test programs. The LTAs shall have been analyzed using methods previously approved by the NRC. The licensee will provide the NRC with a report describing the tests and analyses not less than 30 days prior to startup.

5.3 Reactor Vessel

The reactor vessel shall be as described in Section IV-2.0 of the USAR. The applicable design shall be as described in this section of the USAR.

5.4 Containment

- A. The principal design parameters for the primary containment shall be as given in Table V-2-1 of the USAR. The applicable design shall be as described in Section XII-2.3 of the USAR.
- B. The secondary containment shall be as described in Section V-3.0 of the USAR.
- C. Penetrations to the primary containment and piping passing through such