

UNITED STATES NUCLEAR REGULATORY COMMISSIONTEXAS UTILITIES GENERATING COMPANYDOCKET NO.: 50-446ENVIRONMENTAL ASSESSMENT AND  
FINDING OF NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an Exemption from a portion of the requirements of General Design Criterion 4 (10 CFR 50, Appendix A) to the Texas Utilities Generating Company (the applicant) for the Comanche Peak Steam Electric Station, Unit 2, located at the applicant's site in Somervell/Hood Counties, Texas, approximately 40 miles southwest of Fort Worth, Texas.

ENVIRONMENTAL ASSESSMENT:

Identification of Proposed Action: The Exemption would eliminate the requirement to provide protection on Comanche Peak, Unit 2 from the dynamic effects associated with postulated pipe breaks in eight locations per loop in the primary coolant system. The acceptance of the exemption was made possible by the development of advanced fracture mechanics technology which deal with relatively small flaws in piping components. The behavior of these flaws was examined by deterministic analyses. These advanced techniques, with the resulting improved knowledge of failure modes of piping systems, show that inservice inspection and leakage monitoring systems can reduce the probability of catastrophic failure to insignificant values.

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Need for Proposed Action: The applicant requested approval for elimination of the requirements for protection from the dynamic effects associated with postulated pipe breaks in the primary loop piping for Unit 2. The request included, for these postulated primary loop pipe breaks: (1) the elimination of the need to design for pipe whip, jet impingement and asymmetric effects of cavity pressurization; (2) the elimination of the need to install pipe whip restraints (including shims) and jet impingement shields; and (3) the elimination of the need to include the loads and displacement effects of these postulated primary loop pipe breaks in the design of the reactor coolant system branch piping. General Design Criterion (GDC) 4 requires that structures, systems and components important to safety shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping and discharging fluids that may result from equipment failures, up to and including a double-ended rupture of the largest pipe in the reactor coolant system (Definition of LOCA). Thus, a partial exemption to the requirements of GDC 4 is required for the elimination of these pipe whip restraints and jet shields.

In earlier submittals the applicant has provided information to show by advanced fracture mechanics techniques that the detection of small flaws by either inservice inspection or leakage monitoring systems is assured long before flaws in the piping materials can grow to critical or unstable sizes which could lead to large break areas such as the double-ended guillotine break or its equivalent. The NRC staff has reviewed and accepted the applicant's conclusion. Therefore, the NRC staff agrees that the double-ended guillotine break in the primary pressure coolant loop piping need not be



required as a design basis accident for protection against dynamic effects such as pipe whip, jet impingement, asymmetric effects of cavity pressurization and LOCA loads and displacement effects; i.e., pipe whip restraints (including shims) and jet impingement shields are not needed. Accordingly, the NRC staff agrees that an exemption from GDC 4 is appropriate.

Environmental Impact of the Proposed Action: The proposed Exemption would not alter earlier NRC staff conclusions concerning the environmental impact of a postulated design-basis LOCA for Comanche Peak. In the staff's evaluation of the radiological consequences of the design-basis LOCA (Section 15.4.5 of the SER, NUREG-0797, July 1981), no credit was given for the pipe whip restraints or jet shields to be eliminated in calculating accident doses to the environment. While the pipe whip restraints and jet impingement shields would minimize the damage from pipe whipping or jet impingement forces from a broken pipe, the calculated limitation on stresses required to support this Exemption assures that the probability of pipe breaks which could give rise to such forces are extremely small; thus, on balance, elimination of the pipe whip restraints and jet impingement shields would have no significant effect on overall plant accident risk.

The Exemption does not otherwise affect radiological plant effluent. The Exemption involves design features situated entirely within the restricted area as defined in 10 CFR 20. The elimination of the Unit 2 pipe whip restraints and jet impingement shields would tend to lessen the occupational doses to workers inside containment. Accordingly, ALARA principles would favor elimination of

- 4 -

the restraints and shields. Therefore, the Commission concludes that there are no significant negative radiological impacts associated with this Exemption.

The Exemption does not affect plant non-radioactive effluents and has no other environmental impact. Therefore, the Commission concludes that there are no negative non-radiological impacts associated with this proposed Exemption.

Since the NRC has concluded that there are no significant negative environmental impacts associated with this Exemption, there are no other alternatives which would result in significantly less environmental impact than granting the proposed Exemption. Literal compliance with GDC 4 is the only alternative to the Exemption that has been identified by the NRC staff.

Alternative Use of Resources: This action does not involve the use of resources not previously considered in the Final Environmental Statement (construction permit and operating license) for Comanche Peak, Units 1 and 2.

Agencies and Persons Contacted: The NRC staff reviewed the applicant's request and applicable documents referenced therein that support this Exemption for Comanche Peak, Unit 2. The NRC did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for this action. Based upon the environmental assessment, we conclude that this action will not have a significant effect on the quality of the human environment.

For details with respect to this action, see the request for exemption dated October 31, 1983 and additional information provided by the applicant in letters dated April 23, 1984 (2), June 7, 1984, March 12, 1985 and July 15, 1985. These documents, utilized in the NRC staff's technical evaluation of the exemption request, are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at the Local Public Document Room at the Somervell County Public Library, P. O. Box 417, Glen Rose, Texas 76403.

Dated at Bethesda, Maryland this 15<sup>th</sup> day of January 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

*Charles M. Trammell*

Charles M. Trammell, Acting Director  
PWR Project Directorate #5  
Division of PWR Licensing-A

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\* See next page for previous concurrences

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