NMC
Committed to Nuclear Excellence

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Operated by Nuclear Management Company, LLC

NRC-02-098

October 29, 2002

10 CFR 50.36

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Bases Revision(s) to the Kewaunee Nuclear Power Plant Technical Specifications

Nuclear Management Company (NMC), licensee for the Kewaunee Nuclear Power Plant (KNPP), hereby submits a revision to the Bases for the Technical Specifications (TS). The changes are as follows:

- TS Basis Section 4.4 - During the distribution process for Technical Specification Amendment #155, it was discovered that the bases change on page TS B4.4-3 associated with TS Amendment 152 had been omitted.
- TS Basis Section 4.4 - Changed word processing software from WordPerfect to Word.

These changes have been screened for evaluation pursuant to the requirements of 10 CFR 50.59 in accordance with approved KNPP procedures and were determined to be acceptable.

Attached is a copy of the revised Technical Specification Bases page(s) for your controlled TS.

Sincerely,

Thomas J. Webb
Regulatory Affairs Manager

GOR

Attachments
cc - NRC Regional Administrator
NRC Resident Inspector
PSCW

A001

BASIS

Background - Containment Tests (TS 4.4)

The Containment System is designed to provide protection for the public from the consequences of a Design Basis Accident.[1] The Design Basis Accident is an instantaneous double-ended rupture of the cold leg of the Reactor Coolant System. Pressure and temperature behavior subsequent to the accident was determined by calculations evaluating the combined influence of the energy sources, the heat sinks and engineered safety features. The assumptions and effects for containment vessel leakage rate are detailed in the USAR[2] and further amplified in one of its Appendices.[3]

The total containment system consists of two systems. The Primary Containment System consists of a steel structure and its associated engineered safety features systems. The Primary Containment System, also referred to as the Reactor Containment Vessel, is a low-leakage steel shell, including all of its penetrations, designed to confine the radioactive materials that could be released by accidental loss of integrity of the Reactor Coolant System pressure boundary. It is designed for a maximum internal/test pressure of 46 psig and a temperature of 268°F.

The Secondary Containment System consists of the Shield Building, its associated engineered safety features systems, and a Special Ventilation Zone in the Auxiliary Building. The Shield Building is a medium-leakage concrete structure surrounding the Reactor Containment Vessel and is designed to provide a means for collection and filtration of fission-product leakage from the Reactor Containment Vessel following the Design Basis Accident. A 5-ft. annular space is provided between the Reactor Containment Vessel and the Shield Building. The Shield Building Ventilation System is the engineered safety feature utilized for the collection and filtration of fission-product leakage from the containment vessel.

The Special Ventilation Zone of the Auxiliary Building provides a medium-leakage boundary which confines leakage that could conceivably bypass the Shield Building annulus. The safety system associated with the Auxiliary Building Special Ventilation Zone is the Auxiliary Building Special Ventilation System (ABSVS). One of the functions of the ABSVS is to collect and filter any potential fission products that may bypass the Shield Building annulus.

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(1) USAR Section 14.3
(2) USAR Section 14.3.5
(3) USAR Appendix H

Maintaining CONTAINMENT SYSTEM INTEGRITY in an OPERABLE state requires, among other conditions, that all the requirements of TS 4.4.a and b, leakage rate testing (Containment Leakage Rate Testing Program), are satisfied. The testing process will include: (1) an overall containment leak rate evaluation (Type A); (2) a determination of the leakage through pressure containing or leakage limiting boundaries (Type B); and (3) an evaluation of the leak rate through containment isolation valves (Type C).[(4)] These tests are intended to check all possible paths for containment atmosphere to reach the outside atmosphere.

Shield Building Ventilation System (TS 4.4.c)

Pressure drop across the combined HEPA filters and charcoal adsorbers of < 10 inches of water and an individual HEPA bank pressure drop of <4 inches of water at the system design flow rate (±10%) will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. A test frequency of once per operating cycle establishes system performance capability. This pressure drop is approximately 6 inches of water when the filters are clean.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52 (Rev. 1) dated July 1976, except that ASTM D3803-89 standard will be used to fulfill the guidelines of Table 2, item 5, "Radioiodine removal efficiency." The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly, and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. The use of multi-sample assemblies for test samples is an acceptable alternate to mixing one bed for a sample. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced. Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52 (Rev. 1) dated July 1976.

If painting, fire, or chemical release occurs, the charcoal adsorber will be laboratory tested to determine whether it was contaminated from the fumes, chemicals, or foreign materials. Replacement of the charcoal adsorber can then be evaluated.

Operation of the systems every month will demonstrate operability of the filters and adsorber system. Operation of the Shield Building Ventilation System will result in a discharge to the environment. This discharge is made after at least three samples of the building atmosphere have been analyzed to determine the concentration of activity in the atmosphere.

[(4)] 10 CFR Part 50, Appendix J, Option B

Auxiliary Building Special Ventilation System (TS 4.4.d)

Demonstration of the automatic initiation capability is necessary to assure system performance capability.[5]

Pressure drop across the combined HEPA filters and charcoal adsorbers of < 10 inches of water and an individual HEPA bank pressure drop of < 4 inches of water at the system design flow rate (±10%) will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. A test frequency of once per operating cycle establishes system performance capability. This pressure drop is approximately 6 inches of water when the filters are clean.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52 (Rev. 1) dated July 1976, except that ASTM D3803-89 standard will be used to fulfill the guidelines of Table 2, item 5, "Radioiodine removal efficiency." The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly, and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. The use of multi-sample assemblies for test samples is an acceptable alternate to mixing one bed for a sample. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced. Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52 (Rev. 1) dated July 1976.

If painting, fire, or chemical release occurs, the charcoal adsorber will be laboratory tested to determine whether it was contaminated from the fumes, chemicals, or foreign materials. Replacement of the charcoal adsorber can then be evaluated.

Periodic checking of the inlet heaters and associated controls for each train will provide assurance that the system has the capability of reducing inlet air humidity so that charcoal adsorber efficiency is enhanced.

In-place testing procedures will be established utilizing applicable sections of ANSI N510-1975 standard as a procedural guideline.

Vacuum Breaker Valves (TS 4.4.e)

The vacuum breaker valves are 18 inch butterfly valves with air to open, spring to close operators. The valve discs are center pivot and rotate when closing to an EPT base material seat. When closed, the disc is positioned fully on the seat regardless of flow or pressure direction. Testing these valves in a direction opposite to that which would occur post-LOCA verifies leakage rates of both the vacuum breaker valves and the check valves downstream.

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[5] USAR Section 9.6

Isolation Device Positions (TS 4.4.f)

TS 4.4.f.1 ensures each 36 inch containment purge valve is verified sealed closed at 31-day intervals.[6] This Surveillance is designed to ensure that an inadvertent or spurious opening of a containment purge valve does not cause a gross breach of containment. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit off-site doses. Therefore, these valves are required to be in the sealed closed position when critical. A containment purge valve that is sealed closed must be closed with its control switch sealed in the close position. In this application, the term "sealed" has no connotation of leak tightness. The frequency is a result of a NRC initiative, Generic Issue B-24, related to containment purge valve use during plant operations.

TS 4.4.f.2 ensures the 2-inch vent/purge valves are closed as required or, if open, open for an allowable reason. If a 2-inch vent/purge valve is open in violation of this TS, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The TS is not required to be met when the 2-inch vent/purge valves are open for the reasons stated. The valves may be opened for pressure control, ALARA, or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The 2-inch vent/purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The 31 day frequency is consistent with other containment isolation valve requirements discussed.

TS 4.4.f.3.A requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The TS helps to ensure that post-accident leakage of radioactive fluids or gases outside of the containment boundary are within design limits. This TS does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. Since verification of valve position for containment isolation valves outside containment is relatively easy, the 31 day frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions. The TS specifies that containment isolation valves that are open under administrative controls are not required to meet the TS during the time the valves are open. This TS does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

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[6] Letter from Steven A. Varga (NRC) to C.W. Giesler (WPSC) dated April 22, 1983

TS 4.4.f.3.B requires verification that each containment isolation manual valve and blind flange located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions, is closed. The TS helps to ensure that post-accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For containment isolation valves inside containment, the frequency of "prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN if not performed within the previous 92 days" is appropriate since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. The TS specifies that containment isolation valves that are open under administrative controls are not required to meet the TS during the time they are open. This TS does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

TS 4.4.f.3.C modifies TS 4.4.f.3 for valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted when above COLD SHUTDOWN for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.