Attachment 1

Kewaunee Nuclear Power Plant

Letter from C. R. Steinhardt (WPSC) to NRC Document Control Desk

Dated August 17, 1989

Proposed Technical Specification No. 90

Technical Specification Change to Section 3.8 - Refueling

Description of Change

Technical Specification 3.8.a.7 has been revised to include the following changes:

A. A specific weight (in pounds) which shall be prohibited from traveling over fuel assemblies in either spent fuel pool.

B. The main hook and load block of the fuel handling crane will be allowed to traverse over spent fuel, provided the main hook disconnect switch is in the off position.

C. A requirement to obtain prior NRC approval to handle transport or storage casks in the spent fuel pool.

The basis for specification 3.8.a.7 has been revised to provide additional background information on the 2500 pound load limit on the small hook and the requirement to place the main hook disconnect switch in the off position. The discussion concerning the placement of additional spent fuel racks into the spent fuel pools has been deleted and other minor wording changes have been made to provide additional clarification. In accordance with 10 CFR 50.36(a), the basis is not a part of the Technical Specifications. However, the following Safety Evaluation and Significant Hazards Determination also apply to the changes made in the basis.

Safety Analysis

The technical specification changes associated with items A through C above do not pose an unreviewed safety question for the following reasons:

Item A

This item is consistent with the standard technical specification format which identifies a specific weight (in pounds) that cannot travel over fuel assemblies stored in either spent fuel pool.

The specific load weight of 2500 pounds meets the intent of NUREG 0612 which limits the maximum weight allowed over spent fuel assemblies. The 2500 pound weight limit allowed to be carried by the small fuel handling crane hook is justified by bounding analysis. Specifically, the weight of the small hook and load block assembly is approximately 500 pounds. (This weight together with a 2500 pound load results in a combined weight of approximately 3000 pounds.) An analysis has been performed which concluded that damage to spent fuel elements and the resultant radiation release from a drop of the 7000 pound main hook and load block assembly from the high hook position is bounded by the postulated turbine missile accident. Using this analysis as a bounding criterion, it can be concluded that a 2500 pound maximum load is justifiable since the combined weight of a 2500 pound load, the small hook and load block assembly is less than 7000 pounds.

Furthermore, the wording prohibiting the movement of a load greater than the weight of a fuel assembly (approximately 1800 pounds for KNPP) into the spent

fuel pool when spent fuel is stored in that pool has been deleted. It is being replaced with the wording from the Standard Technical Specifications (STS). The wording in the STS prohibits the movement of a load in excess of a specific weight (i.e., 2500 pounds) from traveling over fuel assemblies in the storage pool.

Item B

The following reasons provide justification supporting the position that an unreviewed safety question does not exist when allowing the main hook of the fuel handling crane to traverse over spent fuel provided the main hook disconnect switch is in the off position.

° With the disconnect switch in the off position, power is removed from the main hoist motor. This prevents movement of the main hook in the up and down direction. Furthermore, the disconnect switch will also remove the power supply to the dual brakes on the main hook. Without power the dual brakes cannot be released.

° The cable for the main hook on the fuel handling crane is made of six individual strands on a hemp core (one strand consists of 37 wires). Each strand is capable of carrying the entire weight of the hook and load block assembly. Therefore, to assume all six strands will break simultaneously is beyond reasonable failure analysis, and highly unlikely.

° The crane cables are inspected during the performance of a preventive maintenance procedure on at least an annual basis. This inspection ensures the cable is in good working condition.

° The cabling for the main hook on the fuel handling crane is rated to lift a 125 ton load. The crane main hook and load block assembly weighs only approximately 3.5 tons. This correlates to a safety factor of over 35.

Item C

This item provides additional control (i.e., NRC approval) prior to handling transport or storage casks in the spent fuel pool; therefore, it would not increase the risk to the public's health and safety.

Significant Hazards Determination

1) The proposed changes do not involve a significant hazards consideration because operation of the Kewaunee Nuclear Power Plant in accordance with these changes would not:

a) Involve a significant increase in the probability or consequences of an accident previously evaluated. This Technical Specification change provides additional clarification by defining a maximum weight in pounds which will be allowed to traverse over fuel assemblies in either spent fuel pool. This change identifies a specific additional requirement prior to moving the main hook and block assembly of the fuel handling crane over spent fuel. Finally, this change requires prior NRC approval for handling transport or storage casks in the spent fuel pool. These

changes are either bounded by a previous analysis or do not significantly increase the probability or consequence of an existing accident due to high margins of safety and therefore no significant hazard exists.

b) Create the possibility of a new or different kind of accident from previously analyzed. Wording meeting the requirements of STS prohibiting the movement of a load in excess of a specific weight (i.e., 2500 pounds) from traveling over fuel assemblies in the storage pool has been added. Furthermore, analyses have been performed which conclude that should either:

° the small hook and load block assembly fall on spent fuel while loaded with a 2500 pound load;

OR

° should the dual brakes on the main hook fail, and the main hook and load block fall from the high hook position;

the corresponding damage to spent fuel elements and the resultant radiation release would be bounded by the postulated turbine missile accident. Therefore, this restriction together with the analyzed accident scenarios (along with the requirement to obtain prior NRC approval for handling transport or storage casks in the spent fuel pool) will not create the possibility of a new or different kind of accident.

c) Involve a significant reduction in a margin of safety. This change does not involve a significant reduction in a margin of safety, since the STS restriction prohibiting the movement of a load in excess of a specific

weight (i.e., 2500 pounds) from traveling over fuel assemblies in the storage pool has been added. Furthermore, a postulated accident in which:

° the small hook and load block assembly fall on spent fuel while loaded with a 2500 pound load;

OR

° the dual brakes on the main hook fail, and the main hook and load block assembly fall from the high hook position onto spent fuel;

has been analyzed with the resultant damage to spent fuel elements and radiation release being bounded by the postulated turbine missile accident.

Finally, the requirement to obtain prior NRC approval for handling transport or storage casks in the spent fuel pool does not involve any reduction in a margin of safety.

This change is similar to an example from the supplementary information of 10 CFR Part 2 revision, Reference 44 FR 7751 Section C.2.e item (vi):

(vi) A change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan, e.g., a change resulting from the application of a small refinement of a previously used calculational model or design method.

Attachment 2

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6. Direct communication between the control room and the operating floor of the containment shall be available whenever changes in core geometry are taking place.

7. A. Loads in excess of 2,500 pounds shall be prohibited from travel over fuel assemblies stored in either spent fuel pool.

   B. Whenever the main hook of the fuel handling crane traverses over spent fuel, the main hook disconnect shall be in the off position.

   C. NRC approval will be obtained prior to handling transport or storage casks in the spent fuel pool.

8. The containment ventilation and purge system, including the capability to initiate automatic containment ventilation isolation, shall be tested and verified to be operable immediately prior to and daily during refueling operations.

9. A. The spent fuel pool sweep system, including the charcoal adsorbers, shall be operating during fuel handling and when any load is carried over the pool if irradiated fuel in the pool has decayed less than 30 days. If the spent fuel pool sweep system, including the charcoal adsorber, is not operating when required, fuel movement shall not be started (any fuel assembly movement in progress may be completed).

12. A licensed senior reactor operator will be on site and designated in charge of the refueling operation.

b. If any of the specified limiting conditions for refueling are not met, refueling of the reactor shall cease. Work shall be initiated to correct the violated conditions so that the specified limits are met, and no operations which may increase the reactivity of the core shall be performed.

Basis

The equipment and general procedures to be utilized during refueling are discussed in the FSAR. Detailed instructions, the above specified precautions, and the design of the fuel handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident occurs during the refueling operations that would result in a hazard to public health and safety.(1) Whenever changes are not being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels (2 above) and neutron flux provides immediate indication of an unsafe condition. The residual heat removal pump is used to maintain a uniform boron concentration.

The shutdown margin indicated in Part 5 will keep the core subcritical, even if all control rods were withdrawn from the core. During refueling, the reactor refueling cavity is filled with approximately 275,000 gallons of borated water. The boron concentration of this water is sufficient to maintain the reactor subcritical by approximately 10% $\Delta k/k$ in the cold condition with all rods inserted, and will also maintain the core subcritical even if no control rods were inserted into the reactor.(2) Periodic checks of refueling water boron concentration insure that proper shutdown margin is maintained. Part 6 allows the control room operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

A 3,000 pound weight limit shall be applied to the fuel handling crane small hook when it's allowed to travel over spent fuel assemblies stored in the spent fuel pool. The fuel handling crane small hook and load block assembly weighs approximately 500 pounds, therefore, only loads up to an additional 2500 pounds (maximum) shall be allowed to travel over spent fuel assemblies stored in the spent fuel pool. Since the fuel handling crane main hook and load block

assembly weighs approximately 7000 pounds, prior to traversing over spent fuel, the main hook disconnect switch shall be in the off position. Interlocks will be utilized to prevent loads from inadvertently traveling over the spent fuel pool. A bypass switch under administrative procedure control will allow the fuel handling crane to travel over the spent fuel pool when necessary.

Interlocks on the fuel handling crane are utilized to ensure safe handling. The spent fuel pool bridge and hoist and manipulator cranes can handle only one fuel assembly at a time. The spent fuel pool bridge and hoist is dead weight tested prior to use to assure proper crane operation.

The one hundred hour decay time following plant shutdown is consistent with the assumption used in the dose calculation for the fuel handling accident. The requirement for the spent fuel pool sweep system, including charcoal adsorbers, to be operating when spent fuel movement is being made provides added assurance that the offsite doses will be within acceptable limits in the event of a fuel handling accident. The spent fuel pool sweep system is designed to sweep the atmosphere above the refueling pool and release to the Auxiliary Building vent during fuel handling operations. Normally, the charcoal adsorbers are bypassed but for purification operation, the bypass dampers are closed routing the air flow through the charcoal adsorbers. If the dampers do not close tightly, bypass leakage could exist to negate the usefulness of the charcoal adsorber. If the spent fuel pool sweep system is found not to be operating fuel handling within the Auxiliary Building will be terminated until the system can be restored to the operating condition.

The bypass dampers are integral to the filter housing. The test of the bypass leakage around the charcoal adsorbers will include the leakage through these dampers.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential radioiodine releases to the atmosphere. Bypass leakage for the charcoal adsorbers and particulate removal efficiency for HEPA filters are determined by halogenated hydrocarbon