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March 13, 1986

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. B. J. Youngblood, Project Director
PWR Project Directorate No. 4

Subject: Catawba Nuclear Station, Unit 2
Docket No. 50-414

Dear Mr. Denton:

This letter contains a description of a change in the Initial Startup Test Program which is reportable under License Condition 3 of Facility Operating License NPF-48 and 10 CFR 50.59(b). Attachment 1 is a copy of the marked-up FSAR page which will be incorporated into the next update of the Catawba FSAR. Attachment 2 provides a copy of the evaluation conducted in accordance with the requirements of 10 CFR 50.59.

Prior to this change, a required step in the Core Verification Procedure was to verify proper Rod Cluster Control Assembly (RCCA) location by RCCA ID number. The revised procedure requires that a visual check be performed to verify that core locations designated for fuel assemblies with RCCA's have these assemblies in them. The check of RCCA locations with ID numbers is unnecessary because this was done as part of a previously completed procedure, the Initial Core Assembly Insert Verification. In addition, a verification of proper RCCA location by ID number is difficult to conduct as well as time consuming.

Prior to commencing fuel loading, the Initial Core Assembly Insert Verification Procedure is completed. As a part of this procedure, the insertion of the proper RCCA's into the correct fuel assemblies is verified by RCCA and fuel assembly ID numbers. During and subsequent to fuel loading, the correct location and orientation of the fuel assemblies is verified.

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Since the Initial Core Insert Verification assures the correct RCCA-fuel assembly matches, and fuel assembly location is checked subsequent to fuel loading, there is reasonable assurance that the RCCA's will be in the correct locations. In addition, the Core Verification Procedure requires a visual check to assure that there is an RCCA in each fuel assembly designated for one.

Therefore, it has been concluded that a verification of RCCA positions by ID numbers is unnecessary.

Very truly yours,

H.B. Tucker /BS

Hal B. Tucker

WLH:slb

Attachments

cc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

NRC Resident Inspector
Catawba Nuclear Station

CNS

Fuel assemblies and inserted components are received, inspected, and placed in storage in accordance with written, approved procedures. Prior to commencing fuel loading each assembly will be inspected to verify that it contains the proper inserted component and that the component is properly oriented. At the time of fuel loading, they are placed in the reactor vessel one at a time according to a previously-established, approved, written sequence which was developed to provide reliable core monitoring with minimum possibility of core mechanical damage. The fuel loading procedure documents include tabular check sheets which prescribe and verify the successive movements of each fuel assembly and its specified inserts from its initial position in the storage racks to its final position in the core. Checks are made of component serial numbers and types at various transfer points to guard against possible inadvertant exchanges or substitutions of components; however, in the event that mechanical damage is sustained during fuel loading operations, to a fuel assembly of a type for which no spare is available onsite, an alternate core loading scheme, whose characteristics closely approximate those of the initial prescribed pattern, is determined and all physics parameters specified for the initial design are verified.

An initial nucleus of eight fuel assemblies, the first of which contains an activated neutron source, is the minimum source-fuel nucleus which permits subsequent meaningful inverse count-rate monitoring. This initial nucleus is determined by calculation and previous experience to be markedly subcritical ($k_{eff} < 0.95$) under the required conditions of fuel loading. Each subsequent fuel addition is accompanied by detailed neutron count rate monitoring to determine that the just-loaded fuel assembly does not excessively increase the count rate and that the extrapolated inverse neutron count rate ratio is not decreasing for unexplained reasons.

Criteria for safe fuel loading require that loading operations cease immediately if:

(a) An unanticipated increase in the neutron count rate by a factor of two occurs on all responding instrumentation channels during any single loading step after the initial nucleus of eight fuel assemblies is loaded (excluding anticipated changes due to detector and/or source movement), or

(b) The neutron count rate on any individual instrumentation channel increases by a factor of five during any single loading step after the initial nucleus of eight fuel assemblies is loaded (excluding anticipated changes due to detector and/or source movements).

An alarm in the Containment and control room is coupled to the source range channels with a setpoint at approximately five times the current count rate. This alarm automatically alerts personnel of a high count rate and requires an immediate stop of fuel loading operations until the situation is evaluated. Following completion of fuel loading each assembly and its inserted component will be visually checked for proper location and orientation. This will not include a verification of RCCA locations by RCCA ID numbers.

Form 34634 (R8-85)

ATTACHMENT 2

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NUCLEAR SAFETY EVALUATION CHECKLIST

(1) STATION: Catawba UNIT: 1 ____ 2 X 3 ____

OTHER: ____

(2) EVALUATION APPLICABLE TO (DESCRIPTION AND NUMBER OF NSM, PROCEDURE, PROCEDURE CHANGE, OR TEST/EXPERIMENT): PT/2/A/4550/03C, Core Verification; procedure change #01.

(3) SAFETY EVALUATION — PART A

The item to which this evaluation is applicable represent:

☒ Yes ☐ No A change to the station or procedures as described in the FSAR: or a test or experiment not described in the FSAR? Affected FSAR Section(s) are: 14.2.10.1

If the answer to the above is "Yes," identify the **affected** section(s) of the FSAR. Attach additional sheets as necessary.

(4) SAFETY EVALUATION — PART B

☐ Yes ☒ No Will this item require a change to the station Technical Specifications? Affected Tech. Specs. Section(s) are: N/A

If the answer to the above is "Yes," identify the specification(s) **affected** and/or attach the applicable page(s) with the change(s) indicated. Tech. Spec. changes require NSRB and NRC approval prior to use.

(5) SAFETY EVALUATION — PART C

As a result of the item to which this evaluation is applicable:

☐ Yes ☒ No Will the probability of an accident previously evaluated in the FSAR be increased? Explain: No FSAR accident assumes that any particular RCCAs are in any particular fuel assembly or core location.

☐ Yes ☒ No Will the consequences of an accident previously evaluated in the FSAR be increased? Explain: see above

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NUCLEAR SAFETY EVALUATION CHECKLIST

☐ Yes ☒ No May the possibility of an accident which is different than any already evaluated in the FSAR be created? Explain: If the RCCA's are not where they are assumed to be in the core loading, the possibility of a SW3 new accident is not created.

☐ Yes ☒ No Will the probability of a malfunction of equipment important to safety previously evaluated in the FSAR be increased? Explain: The RCCA's will function as SW3 required regardless of core location.

☐ Yes ☒ No Will the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR be increased? Explain: see above

☐ Yes ☒ No May the possibility of malfunctions of equipment important to safety different than any already evaluated in the FSAR be created? Explain: see above

☐ Yes ☒ No Will the margin of safety as defined in the bases to any Technical Specification be reduced? Explain: The RCCA rod drop times will not be affected by any particular RCCA pattern within the core locations which have RCCA's.

Justification for the answers above (Yes or No) must be provided in the above spaces (attach additional sheets as necessary).

An unreviewed safety question is involved if any answer to Part C above is "Yes" and NRC authorization is required.

(6) Prepared by: SW Brown Date: 3/2/86

(7) Reviewed by: David A. Wells Date: 3/2/86
(Qualified Reviewer)

Form 00184

Dev. Station Unit

Subject

By Date

Sheet No. of Problem No. Checked By Date

Nuclear Safety Evaluation Checklist
PT/2/A/4550/03C, Core Verification
Procedure Change # 01

(3) Safety Evaluation - Part A

The FSAR section describing the Initial Fuel Loading (Section 14.2.10.1) specifies that "Following completion of fuel loading each assembly and its inserted component will be visually checked for proper location and orientation." This statement needs to be changed to say that the RCCA's need not be verified in proper location by RCCA ID number. All that needs to be verified is that all core locations which are to have RCCA's do have them.

TP/2/A/1550/04, Initial Core assembly Insert Verification (performed on 12/11/85) documented the RCCA ID numbers for the fuel assemblies with RCCA's. This procedure verified that the RCCA's in each fuel assembly were as specified in the Core Assembly Insert Pattern (SNR Satellite File 1.2.1.2).

Even in the extremely unlikely event that the RCCA's have been shuffled among the fuel assemblies which are to have RCCA's, there is no safety significance since there has been no fluence to any RCCA's.