



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 6, 1985

Docket No. 50-414

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

Subject: Amendment to Construction Permit for Catawba
Nuclear Station, Unit 2

The Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 3 to Construction Permit CPPR-117 for the Catawba Nuclear Station, Unit 2, located in York County, South Carolina. The amendment is in response to your letter dated April 17, 1985.

The amendment modifies the construction permit to reflect issuance, by the NRC, of an Exemption dated April 23, 1985. The amendment is effective as of its date of issuance.

A copy of the safety evaluation supporting Amendment No. 3 is enclosed. Also enclosed is a copy of a related notice which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Elinor G. Adensam

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosures:

1. Amendment No. 3 to CPPR-117
2. Safety Evaluation
3. F.R. Notice

cc w/encl:
See next page

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Certified By *[Signature]*

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CATAWBA

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May 6, 1985

CATAWBA NUCLEAR STATION, UNIT 2

AMENDMENT NO. 3 TO CONSTRUCTION PERMIT NO. CPPR-117

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✓ Docket No. 50-414
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DUKE POWER COMPANY

NORTH CAROLINA MUNICIPAL POWER AGENCY NUMBER ONE

PIEDMONT MUNICIPAL POWER AGENCY

DOCKET NO. 50-414

CATAWBA NUCLEAR STATION, UNIT 2

AMENDMENT TO CONSTRUCTION PERMIT

Amendment No. 3
Construction Permit No. CPPR-117


1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 2, Construction Permit No. CPPR-117 filed by the Duke Power Company acting for itself, North Carolina Municipal Power Agency Number One and Piedmont Municipal Power Agency, dated April 17, 1985, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations as set forth in 10 CFR Chapter I;
 - B. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - C. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations, and all applicable requirements have been satisfied.
2. Accordingly, Construction Permit No. CPPR-117 is changed as follows:
 - A. Change paragraph 3 to read:
 3. This permit shall be deemed to contain and be subject to the conditions specified in Sections 50.54 and 50.55, of said regulations; is subject to all applicable provisions of the Act, and rules, regulations, and orders of the Commission now or hereafter in effect, as modified by duly authorized exemptions; and is subject to the conditions specified or incorporated below:
 - B. Change paragraph 3.C. to read:
 - C. This construction permit authorizes the applicant to construct the facility described in the application (as modified by duly authorized

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exemptions) and in the hearing record, in accordance with the principal architectural and engineering criteria and environmental protection commitments set forth therein.

3. This amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

Date of Issuance: May 6, 1985



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION REPORT

CATAWBA NUCLEAR STATION, UNIT 2

RELATED TO AMENDMENT NO. 3

TO CONSTRUCTION PERMIT CPPR-117

INTRODUCTION

By letter dated April 17, 1985, Duke Power Company (DPCo or the applicant), the lead construction agent of the Catawba Nuclear Station, Unit 2, requested an amendment to Construction Permit CPPR-117, to incorporate the partial Exemption previously requested by the applicant by letter dated May 11, 1984, pertaining to General Design Criterion (GDC) 4 of 10 CFR 50, Appendix A. The limited schedular exemption granted by the Commission permits the applicant not to install protective devices and not to consider dynamic effects and loading conditions associated with postulated pipe breaks of the eight locations per loop in the Catawba Unit 2 primary coolant system for a period ending at the completion of the second refueling outage, pending the outcome of rulemaking on this subject. By letter dated September 14, 1984, the applicant submitted an analysis of the occupational radiation dose reduction which, together with the submittals dated December 20, 1983, and May 11, 1984, provided a value-impact analysis associated with the exemption request. The value-impact analysis together with the technical information contained in Westinghouse Reports MT-SME-3166 and WCAP-10546, provided a comprehensive justification in support of requesting a partial exemption from the requirements of GDC 4.

EVALUATION

The staff's detailed evaluation and basis for granting the partial exemption to the requirements of GDC 4 are delineated in the Exemption enclosed with the staff's April 23, 1985, letter. A summary of the staff's evaluation findings and conclusions immediately follow.

SUMMARY OF EVALUATION FINDINGS

From its evaluation of the analysis contained in Westinghouse Reports MT-SME-3166 and WCAP-10546 for Catawba, Unit 2, the staff found that the applicant presented an acceptable technical justification, which adequately addressed the staff's evaluation criteria, to: (1) eliminate the need to postulate circumferential and longitudinal pipe breaks in the Reactor Coolant System (RCS) primary loop (hot leg, cold leg and cross-over leg piping); (2) eliminate the need for associated pipe whip restraints in the RCS primary loop and eliminate the requirement to design for the structural effects associated with RCS primary loop pipe breaks including jet impingement; and (3) eliminate the need to consider dynamic effects and loading conditions associated with previously postulated primary loop pipe breaks.

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This finding does not in any way affect the design bases for the containment, the emergency core cooling system, the environmental qualification of equipment for Catawba Unit 2, or the supports for heavy equipment, and does not alter the design basis of reactor cavity and subcompartment pressurization. This finding is predicated on the fact that each of the parameters evaluated for Catawba is enveloped by the generic analysis performed by Westinghouse, contained in Westinghouse Report WCAP-9558, Revision 2, and accepted by the staff in Enclosure (1) to NRC Generic Letter 84-04 (February 1, 1984). Specifically, the NRC determined that:

- (1) Although the moment associated with the highest stressed location in the main loop primary system piping (which for Catawba Unit 2 occurs in the cross over leg piping) is lower than the bounding moment used by Westinghouse in Reference (5) for the hot leg piping, it is slightly higher than that established by the staff as a limit (i.e., a moment of 42,000 in-kips in Enclosure 1 to Reference 4). However, this is compensated for in that the pipe diameter and thickness are larger than those analyzed by Westinghouse and the staff for the reference case. Thus, the resultant net stresses are within the bounds established by the staff in Enclosure 1 to Reference (4). The Catawba loads are 1,864 kips (axial) and 43,407 in-kips (bending moment).
- (2) For Westinghouse plants, there is no history of cracking failure in reactor primary coolant system loop piping. The Westinghouse reactor coolant system primary loop has an operating history which demonstrates its inherent stability. This includes a low susceptibility to cracking failure from the effects of corrosion (e.g. intergranular stress corrosion cracking), water hammer, or fatigue (low and high cycle). This operating history totals over 400 reactor-years, including five (5) plants each having 15 years of operation and 15 other plants with over 10 years of operation.
- (3) The results of the leak rate calculations performed for Catawba, using an initial through-wall crack of 7.5 inches, are identical to those of Enclosure 1 to Generic Letter 84-04. The Catawba plant has an RCS pressure boundary leak detection system which is consistent with the guidelines of Regulatory Guide 1.45, and it can detect leakage of one (1) gpm within one hour. The calculated leak rate through the postulated flaw is at least 10 gpm. Therefore, the Catawba plant leak detection system is capable of detecting leaks one-tenth that of the calculated leak rate.
- (4) The margin in terms of load based on fracture mechanics analyses for the leakage-size crack under normal plus SSE loads is within the bounds calculated by the staff in Section 4.2.3 of Enclosure 1 to Generic Letter 84-04. Based on a limit-load analysis, the load margin is about 2.4 and based on the J limit discussed in (6) below, the margin is at least 1.3.

- (5) The margin between the leakage-size crack and the critical-size crack was calculated by a limit load analysis. Again, the results demonstrated that a margin of at least 3 on crack size exists and is within the bounds of Section 4.2.3 of Enclosure 1 to Generic Letter 84-04.
- (6) As an integral part of its review, the staff's evaluation of the material properties data in Westinghouse Report WCAP-10456 is enclosed as Appendix I to the Exemption granted by the Commission. In WCAP-10456, data for ten (10) plants, including the Catawba units, are presented, and lower bound or "worst case" materials properties were identified and used in the analysis performed in WCAP-10546 by Westinghouse. The applied J for Catawba in WCAP-10546 was less than 3000 in-lb/in². Hence, the staff's upper bound of 3000 in-lb/in² on the applied J (refer to Appendix I of the Exemption, page 6) was not exceeded.

ENVIRONMENTAL ASSESSMENT

In advance of issuing the Exemption, the Commission published in the Federal Register on April 22, 1985 (50 FR 15802) an "environmental assessment and finding of no significant impact." It was stated in that assessment that the planned Exemption action would not have a significant effect on the quality of the human environment. The Exemption granted involves design features located entirely within the plant restricted area as defined in 10 CFR Part 20; does not affect plant radioactive and non-radioactive-effluents; has no other environmental impact; and does not involve the use of resources not previously considered in the Final Environmental Statement (construction permit) for Catawba, Units 1 and 2.

The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has determined that the amendment involves no significant hazards considerations. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

CONCLUSION

In granting the limited schedular Exemption, the staff found that the advanced fracture mechanics techniques used by the applicant provided an assurance that flaws in primary system piping will be detected before they reach a size that could lead to unstable crack growth. For this reason, further protection provided by protective devices against the dynamic effects resulting from the discharge from postulated breaks in the primary piping is unnecessary. Additionally, consideration of such dynamic effects associated with previously postulated pipe breaks is unnecessary. With full protection against dynamic effects provided by advanced analysis techniques, and based on the considerations discussed

above, we conclude that: (1) the proposed amendment to Construction Permit CPPR-117 permitting the use of the Exemption in construction of Unit 2 does not involve a significant increase in the probability or consequences of accidents previously considered, does not create the possibility of an accident of a type different from any evaluated previously, does not involve a significant decrease in a safety margin, and thus does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (3) such activities will be in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security, or to the health and safety of the public.

Principal contributor: K. Jabbour, Licensing Branch No. 4, DL

Date of Issuance: May 6, 1985

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-414DUKE POWER COMPANYNORTH CAROLINA MUNICIPAL POWER AGENCY NUMBER ONEPIEDMONT MUNICIPAL POWER AGENCYNOTICE OF ISSUANCE OF AMENDMENT TO CONSTRUCTION PERMIT

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 3 to Construction Permit No. CPPR-117 for Catawba Nuclear Station, Unit 2. The amendment modifies the construction permit to reflect issuance, by the Commission, of a limited schedular Exemption dated April 23, 1985, from the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 4 with respect to installation of certain protective devices and consideration of certain dynamic effects. The amendment is effective as of its date of issuance.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations. The Commission has made appropriate findings as required by the Act and the Commission's regulations in 10 CFR Chapter I, which are set forth in the amendment. Prior public notice of this amendment was not required since the Commission has determined that this amendment does not involve a significant hazards consideration.

By June 10, 1985, the licensee may file a request for a hearing with respect to issuance of the amendment to the subject facility construction permit and any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a written petition for leave to intervene. Requests for a hearing and petitions for leave to

intervene shall be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in a 10 CFR Part 2. If a request for a hearing or petition for leave to intervene is filed by the above date, the Commission or an Atomic Safety and Licensing Board, designated by the Commission or by the Chairman of the Atomic Safety and Licensing Board Panel, will rule on the request and/or petition and the Secretary or the designated Atomic Safety and Licensing Board will issue a notice of hearing or an appropriate order.

As required by 10 CFR 2.714, a petition for leave to intervene shall set forth with particularity the interest of the petitioner in the proceeding and how that interest may be affected by the results of the proceeding. The petition should specifically explain the reasons why intervention should be permitted with particular reference to the following factors: (1) The nature of the petitioner's right under the Act to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any order which may be entered in the proceeding on the petitioner's interest. The petition should also identify the specific aspect(s) of the subject matter of the proceeding as to which petitioner wishes to intervene. Any person who has filed a petition for leave to intervene or who has been admitted as a party may amend the petition without requesting leave of the Board up to fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, but such an amended petition must satisfy the specificity requirements described above.

Not later than fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, a petitioner shall file a supplement to the petition to intervene which must include a list of the contentions which are sought

to be litigated in the matter, and the bases for each contention set forth with reasonable specificity. Contentions shall be limited to matters within the scope of the amendment under consideration. A petitioner who fails to file such a supplement which satisfies these requirements with respect to at least one contention will not be permitted to participate as a party.

Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene, and have the opportunity to participate fully in the conduct of the hearing, including the opportunity to present evidence and cross-examine witnesses.

Since the Commission has determined that the amendment involves no significant hazards consideration, if a hearing is requested, it will not stay the effectiveness of the amendment. Any hearing held would take place while the amendment is in effect.

A request for a hearing or a petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention Docketing and Service Branch, or may be delivered to the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., by the above date. Where petitions are filed during the last ten (10) days of the notice period, it is requested that the petitioner promptly so inform the Commission by a toll-free telephone call to Western Union at (800) 325-6000 (in Missouri (800) 342-6700). The Western Union operator should be given Datagram Identification Number 3737 and the following message addressed to Elinor Adensam: petitioner's name and telephone number; date petition was mailed; plant name; and publication date and page number of this Federal Register notice. A copy of the petition should also be sent to the Executive Legal

Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and to William L. Porter, Esq., Duke Power Company, P.O. Box 33189, Charlotte, North Carolina 28242.


Nontimely filings of petitions for leave to intervene, amended petitions, supplemental petitions and/or requests for hearing will not be entertained absent a determination by the Commission, the presiding officer or the Atomic Safety and Licensing Board designated to rule on the petition and/or request, that the petitioner has made a substantial showing of good cause for the granting of a late petition and/or request. That determination will be based upon a balancing of the factors specified in 10 CFR 2.714(a)(1)(i)-(v) and 2.714(d).

For further details with respect to the action, see (1) the application for amendment dated April 17, 1985, (2) Amendment No. 3 to Construction Permit No. CPPR-117, (3) the Commission's related Safety Evaluation, (4) the Exemption dated April 23, 1985 (50 FR 16758, April 29, 1985), and (5) the Notice of Environmental Assessment and Finding of No Significant Impact dated April 17, 1985 (50 FR 15802, April 22, 1985). All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C. 20555, and at the York County Library, 138 East Black Street, Rock Hill, South Carolina 29730. In addition a copy of items (2), (3), (4),

and (5) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing, Office of Nuclear Reactor Regulation.

Dated at Bethesda, Maryland, this 6th day of May 1985.

FOR THE NUCLEAR REGULATORY COMMISSION


Hugh U. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation