



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

DUKE POWER COMPANY

NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION

SALUDA RIVER ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-413

CATAWBA NUCLEAR STATION, UNIT 1

FACILITY OPERATING LICENSE

License No. NPF-31

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for license filed by the Duke Power Company acting for itself and North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc. (the licensees) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I; and all required notifications to other agencies or bodies have been duly made;
 - B. Construction of the Catawba Nuclear Station, Unit 1 (the facility) has been substantially completed in conformity with Construction Permit No. CPPR-116 and the application, as amended, the provisions of the Act and the regulations of the Commission;
 - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D. below);
 - D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I (except as exempted from compliance in Section 2.D. below);
 - E. Duke Power Company* is technically qualified to engage in the activities authorized by this license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
 - F. The licensees have satisfied the applicable provisions of 10 CFR Part

*Duke Power Company is authorized to act as agent for the North Carolina Electric Membership Corporation and the Saluda River Electric Cooperative, Inc., and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

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140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;

- G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
 - H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of this Facility Operating License No. NPF-31, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied;
 - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70.
2. Based on the foregoing findings and the Partial Initial Decisions issued by the Atomic Safety and Licensing Boards dated June 22, September 18, and November 27, 1984, regarding this facility and satisfaction of conditions therein imposed, except as hereinafter set forth, Facility Operating License No. NPF-24 authorizing fuel loading and precriticality testing issued on July 18, 1984, is superseded by Facility Operating License No. NPF-31 hereby issued to the Duke Power Company, the North Carolina Electric Membership Corporation, and the Saluda River Electric Cooperative, Inc., (the licensees) to read as follows:
- A. This license applies to the Catawba Nuclear Station, Unit 1, a pressurized water reactor and associated equipment (the facility) owned by the Duke Power Company, the North Carolina Electric Membership Corporation, and the Saluda River Electric Cooperative, Inc. The facility is located on the licensees' site in York County, South Carolina, on the shore of Lake Wylie approximately 6 miles north of Rock Hill, South Carolina, and is described in Duke Power Company's Final Safety Analysis Report, as supplemented and amended through Revision No. 11, and in its Environmental Report, as supplemented and amended through Revision No. 6;
 - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:
 - (1) Duke Power Company, pursuant to Section 103 of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location in York County, South Carolina, in accordance with the procedures and limitations set forth in this license;
 - (2) North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc., to possess the facility at the designated location in York County, South Carolina, in accordance with the procedures and limitations set forth in this license;

- (3) Duke Power Company, pursuant to the Act and 10 CFR Part 70 to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended through Revision No. 11;
 - (4) Duke Power Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (5) Duke Power Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
 - (6) Duke Power Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility authorized herein.
 - (7) Duke Power Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of McGuire Nuclear Station, Units 1 and 2, and Oconee Nuclear Station, Units 1, 2 and 3.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Duke Power Company is authorized to operate the facility at reactor core power levels not in excess of 3411 megawatts thermal (100% power) in accordance with the conditions specified herein and in Attachment 1 to this license. The preoperational tests, startup tests and other items identified in Attachment 1 to this license shall be completed as specified. Attachment 1 is hereby incorporated into this license. Pending Commission approval, this license is restricted to power levels not to exceed 5 percent of full power (170 megawatts thermal).

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Duke Power Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Initial Startup Test Program (Section 14, SER, SSER #3)*

Duke Power Company shall conduct those aspects of the post-fuel-loading initial test program described in Chapter 14 of the FSAR, as amended, which are consistent with the limits of this license without making any major modifications unless such modifications have prior NRC approval. Major modifications are defined as:

- (a) elimination of any safety-related test;
- (b) modification of objectives, test method, or acceptance criteria for any safety-related test**;
- (c) performance of any safety-related test at a power level different from that stated in the FSAR by more than 5 percent of rated power;***
- (d) failure to satisfactorily complete the entire initial startup test program by the time core burnup equals 120 effective full power days;***
- (e) deviation from initial test program administrative procedures or quality assurance controls described in the FSAR; and ***
- (f) delays in test program in excess of 30 days (14 days if power level exceeds 50 percent), concurrent with power operation. If continued power operation is desired during a delay, Duke Power Company shall provide justification that adequate testing has been performed and evaluated to demonstrate that the facility can be operated at the planned power level with reasonable assurance that the health and safety of the public will not be endangered.***

*The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

**Safety-related tests are those tests which verify the design, construction and operation of safety-related systems, structures, and equipment.

***These major modifications would also be inconsistent with certain conditions of this license.

(4) Antitrust Conditions

Duke Power Company shall comply with the antitrust conditions delineated in Appendix C to this license.

(5) Inservice Testing of Pumps and Valves (Section 3.9.6, SSER #2)

Pursuant to 10 CFR Part 50.55a and for the reasons set forth in Section 3.9.6 of SSER #2, the relief identified in the submittal dated March 9, 1983, July 10, 13, 18, 23, 27, October 1, and November 6, 1984, that Duke Power Company has requested from the pump and valve testing requirements of 10 CFR Part 50, Section 50.55a(g)(3) and (g)(4)(i) is granted for that portion of the initial 120-month period until the staff completes its review or until December 1, 1986, whichever is earlier.

(6) Inservice Inspection Program (Sections 5.2.4 and 6.6, SSER #2)

By January 18, 1985, Duke Power Company shall submit the inservice inspection program for staff review and approval.

(7) Environmental Equipment Qualification (Section 3.11, SER, SSER #3, SSER #4)

Prior to March 31, 1985, Duke Power Company shall environmentally qualify all electrical equipment as required by 10 CFR 50.49.

(8) Fire Protection Program (Section 9.5.1, SER, SSER #1, SSER #2, SSER #3, SSER #4)

- (a) Duke Power Company shall maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility through Revision 11 and as approved in the SER through Supplement 4, subject to provisions b & c below.
- (b) Duke Power Company may make no change to features of the approved fire protection program which would decrease the level of fire protection in the plant without prior approval of the Commission. To make such a change Duke Power Company must submit an application for license amendment pursuant to 10 CFR 50.90.
- (c) Duke Power Company may make change to features of the approved fire protection program which do not decrease the level of fire protection without prior Commission approval, provided:
 - (i) such changes do not otherwise involve a change in a

license condition or technical specification or involve an unreviewed safety question (see 10 CFR 50.59).

- (ii) such changes do not result in failure to complete the fire protection program approved by the Commission prior to license issuance.

Duke Power Company shall maintain, in an auditable form, a current record of all such changes including an analysis of the effects of the change on the fire protection program and shall make such records available to NRC inspectors upon request. All changes to the approved program made without prior Commission approval shall be reported annually to the Director of the Office of Nuclear Reactor Regulation together with supporting analyses.

(9) Turbine Missiles (Section 3.5.1.3, SER)

Duke Power Company shall submit for NRC staff approval, within three years of date of issuance of this license, a turbine system maintenance program based on the manufacturer's calculations of missile generation probabilities acceptable to the NRC staff or volumetrically inspect all low pressure turbine rotors within three years or by the second refueling outage, whichever is later, and thereafter every three years or every other refueling outage until a maintenance program is approved by the staff.

(10) Operating Staff Experience Requirements (Section 13.1.2.3, SSER #3, SSER #4)

Duke Power Company (DPC) shall have a licensed senior operator on each shift who has had at least six months of hot operating experience on a similar type plant, including at least six weeks at power levels greater than 20% of full power, and who has had start-up and shutdown experience. For those shifts where such an individual is not available on the plant staff, an advisor shall be provided who has had at least four years of power plant experience, including two years of nuclear plant experience, and who has had at least one year of experience on shift as a licensed senior operator at a similar type facility. Use of advisors who were licensed only at the RO level will be evaluated on a case-by-case basis. Advisors shall be trained on plant procedures, technical specifications and plant systems, and shall be examined on these topics at a level sufficient to assure familiarity with the plant. For each shift, the remainder of the shift crew shall be trained in the role of the advisors. These advisors shall be retained until the experience levels identified in the first sentence above have been achieved. The NRC shall be notified at least 30 days prior to the date DPC proposes to release the advisors from further service.

- (11) Detailed Control Room Design Review, I.D.1 (Section 18.0, SER, SSER #2)

Duke Power Company shall correct all human engineering deficiencies according to the schedule contained in the letter from Duke Power Company dated February 20, 1984.

- (12) Emergency Response Capabilities (Generic Letter 82-33, Supplement 1 to NUREG-0737).

- (a) Regulatory Guide 1.97, Revision 2 Compliance (Section 7.5.2, SSER #4)

Prior to startup following the first refueling outage, Duke Power Company shall implement modifications (installation or upgrade) for those items listed below consistent with the guidance of Regulatory Guide 1.97, Revision 2 unless prior approval of an alternate design of these items is granted by the NRC staff. These items, as listed in Duke Power Company's letter of September 26, 1983, are: (a) reactor coolant system cold leg water temperature, (b) containment sump water level, (c) residual heat removal heat exchanger outlet temperature, (d) accumulator tank level and pressure, (e) steam generator pressure, (f) containment sump water temperature, (g) chemical and volume control system makeup flow and letdown flow, (h) emergency ventilation damper position, (i) area radiation, and (j) plant airborne and area radiation.

- (b) Safety Parameter Display System (SPDS)

Prior to April 1, 1985, Duke Power Company shall have the SPDS operational.

- (13) Anticipatory Reactor Trip, II.K.3.10 (Section 5.2.2, SER)

Prior to exceeding 70% power, Duke Power Company shall complete the described turbine trip tests to verify that PORVs will not be challenged when the anticipatory trip bypass is in effect.

- (14) Hydrogen Control Measures, II.B.7 (Section 6.2.5, Appendix C, SER; Section 6.2.5, SSER #2, SSER #3, SSER #4)

Prior to April 1, 1985, upgraded analyses and tests shall be provided on the following issues and submitted for staff review and approval:

- (a) thermal response of the containment atmosphere and essential equipment for a spectrum of accident sequences using revised heat transfer models.

- (b) effects of upper compartment burns on the operation and survival of air return fans and ice condenser doors.
- (c) operability of the glow plug igniter in a spray environment typical of that expected in the upper compartment of the containment.

(15) Instrumentation for Detection of Inadequate Core Cooling, II.F.2
(Section 4.4.3.4, SER, SSER #2)

Prior to startup following the first refueling outage, Duke Power Company shall complete the upgrade of the existing subcooling margin monitor and the existing backup display.

(16) Steam Generator Tube Rupture (Section 15.4.4, SER, SSER #2)

Prior to startup following the first refueling outage, Duke Power Company shall submit for NRC staff review and approval an analysis which demonstrates that the steam generator single-tube rupture analysis presented in the FSAR is the most severe case with respect to the release of fission products and calculated doses. Consistent with the analytical assumptions, Duke Power Company shall propose any necessary changes to Appendix A to this license.

(17) Main Steam Line Break (MSLB) Inside Containment (Section 6.2.1.1, SER, SSER #2, SSER #4)

- (a) Prior to startup following the first refueling outage, Duke Power Company shall submit for NRC review and approval the results of a completed program of tests and analyses to confirm the validity and accuracy of the models and assumptions employed in the revised containment response analysis for MSLB accidents. This program shall include, but not be limited to, the following elements:
 - (i) Hydraulic tests to quantify key parameters related to drain flow model input and assumptions for drain region configurations representative of those in the plant, and uncertainty analysis of measured and computed parameters.
 - (ii) Supplementary tests or analyses to address (i) the applicability of drain flow tests conducted in air to steam environments and (ii) the effect of thermal gradients within the drain flow liquid sheets and droplets.
 - (iii) Revised containment response analyses which incorporate the results of the drain flow test program and address the thermal response to dead-ended compartments.

- (iv) Additional containment response sensitivity analyses to investigate the effect of drain water temperature and flow rate, and uncertainties in parameters determined by test.
 - (v) Scaled tests or detailed mass transport analyses for a spectrum of break locations to quantify the impact of break conditions on thermal gradients and non-condensable gas distribution in containment and on ice condenser performance.
- (b) During the interim period of operation, Duke Power Company shall submit to the NRC staff bimonthly reports on the progress of the above confirmatory research program of tests and analyses regarding containment response for MSLB accidents.
- (18) Residual Heat Removal System (Section 5.4.4, SER, SSER #2; Section 15.4.4, SSER #3, SSER #4)*
- Prior to startup following the first refueling outage, Duke Power Company shall upgrade the pressurizer power operated relief valves (PORVs) and the steam generator PORVs to safety related.
- (19) Seismic Equipment Qualification (Section 3.10, SSER #2, SSER #3, SSER #4)
- A seismic test will be performed utilizing a generic mounting scheme with a GLASTIC pad and fiberglass bushing for electrical isolation to verify the acceptability of the existing mounting. This test will be completed by July 1985.
- (20) Internal Corrosion Protection For Fuel Oil Storage Tanks (Section 9.5.4.2, SER)
- Prior to startup following the first refueling outage, Duke Power Company shall apply internal corrosion protection to the fuel oil storage tanks, or, by March 1, 1985, provide for staff review and approval justification for not coating the tanks.
- (21) Transamerica Delaval, Inc. (TDI) Diesel Generators (Section 8.3.1, SSER #4)
- Prior to startup following the first refueling outage, Duke Power Company shall implement the TDI Owners' Group recommendations.

*Requires exemption; see paragraph 2.0

(22) Generic Letter 83-28 (Section 15.6, SSER #4)

Duke Power Company shall submit responses to and implement the requirements of Generic Letter 83-28 on a schedule which is consistent with that given in its November 2, 1984, letter.

(23) Progress of Offsite Emergency Preparedness (Section 13.3, SER, SSER #1, SSER #2, SSER #3, SSER #4)

In the event that the NRC finds that the lack of progress in completion of the procedures in the Federal Emergency Management Agency's final rule, 44 CFR Part 350, is an indication that a major substantive problem exists in achieving or maintaining an adequate state of preparedness, the provisions of 10 CFR Section 50.54(s)(2) will apply.

(24) Emergency Preparedness Issues (ASLB PID, 9/18/84)

Within 180 days of the issuance of this license, Duke Power Company shall have submitted for staff review and received staff approval on the following items:

1. The Public Information Brochure shall state that high levels of radiation are harmful to health and may be life threatening. Such statements shall be contained within that portion of the brochure that deals with actions to be taken in the event of an emergency.
2. The warning signs and decals shall specify the types of emergencies they cover including nuclear.
3. The warning signs and decals shall notify transients as to where they can obtain local emergency information, as provided in NUREG-0654 Evaluation Criterion II.G.2.
4. The emergency plans shall reflect the kinds of locations within the plume exposure EPZ wherein the warning signs and decals and emergency response information will be placed and the procedures employed to assure that sufficient numbers are being distributed to effectively reach transients, and that the plans are implemented.
5. Comprehensive plans shall provide for early notification to Carowinds of a radiological emergency at Catawba and for evacuation of Carowinds. The plans shall describe the responsibilities of the emergency response organizations of Mecklenburg and York Counties and provide for the coordination of their efforts among themselves and with Carowinds'

officials. The plans shall provide for immediate notification of patrons and staff of Carowinds at the time of the precautionary closing of the park, of the cause of the emergency. The means to implement the plans shall be made available.

(25) Quality Assurance Issues (ASLB PID, 6/22/84)

By December 22, 1984, or prior to authorization of full power operation (whichever is later), Duke Power Company shall modify and clarify its written policy on harassment of employees (which currently focuses on equal rights/equal opportunity issues) to make it clear that the policy precludes actions against QA/QC inspectors intended to impede the inspector's proper performance of his duties.

- D. The facility requires exemptions from certain requirements of Appendices A, E and J to 10 CFR Part 50. These include (a) partial exemption from General Design Criterion 1 of Appendix A, with respect to the upgrade to safety-related of the pressurizer power operated relief valves (PORVs) and steam generator PORVs until first refueling (Section 5.4.4 of SER and SSER 2, and Section 15.4.4 of SSERs 3 and 4), (b) exemption from the requirements of Appendix E, IV.F, insofar as they may require the active participation of all Crisis Management Center personnel for the Catawba Station emergency preparedness exercises (Section 13.3 of SSER 4), (c) partial exemption from the requirement of paragraph III.D.2(b)(ii) of Appendix J, the testing of containment airlocks at times when the containment integrity is not required (Section 6.2.6 of the SER, and SSERs 3 and 4), (d) exemption from the requirement of paragraph III.A.(d) of Appendix J, insofar as it requires the venting and draining of lines for type A tests (Section 6.2.6 of SSER 3), and (e) partial exemption from the requirements of paragraph III.B of Appendix J, as it relates to bellows testing (Section 6.2.6 of the SER and SSER 3). These exemptions are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. These exemptions are, therefore, hereby granted pursuant to 10 CFR 50.12. With the granting of these exemptions, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.
- E. Duke Power Company shall fully implement and maintain in effect all provisions of the Commission approved physical security, guard training and qualification and safeguards contingency plans, including amendments made pursuant to the authority of 10 CFR 50.54 (p). The approved plans which contain 10 CFR 73.21 information are collectively entitled: "Catawba Nuclear Station

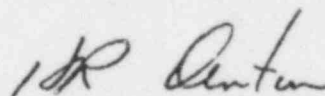
Physical Security Plan" Revision 1 dated February 1, 1982, with additional pages dated May 17, 1982 (transmittal letter dated May 27, 1982), Revision 2 dated May 17, 1982 (transmittal letter dated May 18, 1982), Revision 3 dated July 20, 1982 (transmittal letter dated August 18, 1982), Revision 4 dated June 1, 1983 (transmittal letter dated June 20, 1983), Revision 5 dated April 13, 1984 (transmittal letter dated April 16, 1984) and Revision 5 additional pages dated June 25, 1984 (transmittal letter dated July 3, 1984); and the "Catawba Nuclear Station Safeguards Contingency Plan" dated June 29, 1981 (transmittal letter dated June 30, 1981), Revision 1 dated February 1, 1982 (transmittal letter dated February 10, 1982), Revision 2 dated January 3, 1983 (transmittal letter dated January 25, 1983), Revision 3 dated April 13, 1984 (transmittal letter dated April 16, 1984); and the "Catawba Nuclear Station Training and Qualification Plan" dated October 21, 1981, and Revision 4 dated October 25, 1983.

F. Reporting to the Commission

Duke Power Company shall report any violations of the requirements contained in Section 2, Items C.(1), C.(3) through C.(25) of this license. Initial notification shall be made within twenty-four (24) hours in accordance with the provisions of 10 CFR 50.72 with written follow-up within 30 days in accordance with the procedures described in 10 CFR 50.73 (b), (c) and (e).

- G. The licensees shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- H. This license is effective as of the date of issuance and shall expire at midnight on December 6, 2024.

FOR THE NUCLEAR REGULATORY COMMISSION



Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosures:

1. Attachment I
2. Appendix A - Technical Specifications
3. Appendix B - Environmental Protection Plan
4. Appendix C - Antitrust Conditions

Date of Issuance: December 6, 1984

ATTACHMENT 1 TO LICENSE NPF-31

1. Prior to initial criticality, Duke Power Company will complete hot functional preoperational testing to the satisfaction of the staff.
2. Within 60 days of the issuance of this license, Duke Power Company (DPC) shall have implemented, to the satisfaction of the staff, the TDI diesel generator maintenance and surveillance program committed to in DPC letters dated July 16, October 9, and December 5, 1984, which is in accordance with the staff's SER transmitted to DPC by letter dated August 14, 1984.