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Mr. Samuel J. Collins, Director  
Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Duke Energy Corporation  
Catawba Nuclear Station, Units 1 and 2  
Docket Numbers 50-413 and 50-414  
Request for Exemption  
10 CFR 55 Operators' Licenses

The purpose of this letter is to request, in accordance with the provisions of Title 10 Code of Federal Regulations Section 55.11 (10 CFR 55.11) an exemption from certain requirements of 10 CFR 55, "Operators' Licenses," for Catawba Nuclear Station (CNS) Units 1 and 2. The exemption request is provided as an attachment to this letter.

Specifically, Duke Energy requests an exemption from the requirements of 10 CFR 55.31(a)(5), which requires that five significant control manipulations which affect reactivity or power level be performed on the actual plant as a prerequisite for license eligibility. This exemption will allow CNS to perform the control manipulations on a simulator facility in lieu of using the actual plant.

At CNS, a current license class is in progress, which includes candidates that are Reactor Operator (RO) or Instant Senior Reactor Operator (SRO) who must obtain 5 control manipulations each. The only scheduled plant activities between now and the April 2001 exam date that can be used to perform the control manipulations will occur during the upcoming Unit 1 refueling outage. Even if the candidates are scheduled to conduct most of the control manipulations as they occur in the plant, they will still be lacking a substantial number of control manipulations and unplanned plant power maneuvering will have to be used to complete the required control manipulations.

The requested exemption will promote more effective plant operating experience for initial license applicants by allowing use of the simulation facility in lieu of the actual plant to satisfy the license eligibility requirements for performance of control manipulations that affect reactivity or power level.

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The simulator will use models relating to the nuclear and thermal-hydraulic characteristics that replicate the core load that exists in the nuclear power unit for which a license is being sought at the time of the applicant's operating test. Simulator fidelity will be demonstrated so that significant control manipulations are completed without procedural exceptions, simulator performance exceptions, or deviation from the approved training scenario sequence.

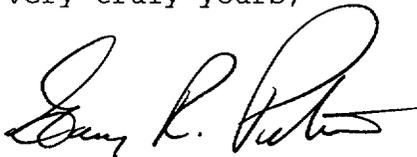
Use of the simulator will also allow for enhanced training through a wider range of available operation in an environment that is more conducive to individualized instruction. Additionally, there are cost savings associated with using the simulator in lieu of the plant particularly during periods of steady state operation.

The only commitments in this exemption request are those described in section II.D, "Simulator Assessment" of the attachment.

The requested exemption satisfies the requirements of 10 CFR 55.11 in that it is authorized by law and will not endanger the life or property and is otherwise in the public interest.

Inquiries on this matter should be directed to R. D. Hart at (803) 831-3622.

Very truly yours,



Gary R. Peterson

RDH/s

Attachments

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xc (with attachments):

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Catawba Nuclear Station Units 1 and 2  
Request for Exemption  
10 CFR 55 Operators' Licenses

## **I. Introduction**

The purpose of this submittal is to request, in accordance with the provisions of Title 10 Code of Federal Regulations section 55.11 (10 CFR 55.11), "Specific Exemptions" an exemption from the requirements of 10 CFR 55.31(a)(5) for the Catawba Nuclear Station Units 1 and 2.

## **II. Discussion**

### **A. Background**

Pursuant to 10 CFR 55.31(a)(5) a licensee shall provide evidence that an applicant, as a trainee, has successfully manipulated the controls of a facility for which a license is sought. At a minimum, five significant control manipulations must be performed which affect the reactivity or power level. At Catawba Nuclear Station (CNS), a current license class is in progress, which includes 13 candidates that are reactor operator (RO) or Instant senior reactor operator (SRO) candidates who must obtain 5 control manipulations each for a total of 65 control manipulations. The only scheduled plant activities between now and the exam date that can be used to perform the control manipulations will occur during the upcoming Unit 1 refueling outage. Even if the candidates are scheduled to conduct most of the control manipulations as they occur in the plant, they will still be lacking a substantial number of control manipulations and unplanned plant power maneuvering will have to be used to complete the required control manipulations.

The standards applied by the NRC to grant an exemption from regulatory requirements are set forth in 10 CFR 55.11. The standards are that:

"The Commission may, upon application by an interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property and are otherwise in the public interest."

### **B. Requested Exemption**

Duke Energy requests an exemption from the requirements of 10 CFR 55.31(a)(5) which requires that five significant control manipulations which affect

reactivity or power level be performed on the actual plant as a prerequisite for license eligibility, so that a simulation facility may be considered acceptable for completion of this requirement. This exemption will promote more effective plant operating experience for initial license applicants by allowing use of the simulation facility in lieu of the actual plant to satisfy the license eligibility requirements for performance of control manipulations that affect reactivity or power level. Use of the simulator will also allow for enhanced training through a wider range of available operation in an environment that is more conducive to individualized instruction. Additionally, there are cost savings associated with using the simulator in lieu of the plant particularly during periods of steady state operation.

The Nuclear Regulatory Commission is currently proposing to amend (FR 00-16751) the regulations of 10 CFR 55.31(a)(5) for operator and senior operator licenses to fulfill a portion of the experience prerequisites for license eligibility by manipulating a plant-referenced simulator as an alternative to use of the actual plant. The plant-referenced simulator used must meet the requirements of the proposed revisions to 10 CFR 55.45(b) (FR 00-16751).

SECY-99-225, "Rulemaking Plan for Changes to 10 CFR Part 55 to Reduce Unnecessary Regulatory Burden Associated With the Use of Simulation Facilities in Operator Licensing," dated September 8, 1999, discusses the rulemaking plan for changes to 10 CFR Part 55. Specifically in the background section entitled, "Interim Regulatory Burden Relief Through Exemptions to 10 CFR Part 55.31(a)(5)," it states that during the rulemaking, the staff is prepared to favorably consider requests for exemption from the requirements of 10 CFR 55.31(a)(5). These exemptions will be reviewed on a case by case basis with evidence from the facility licensee that, with respect to the planned reactivity manipulation scenarios, simulator fidelity is assured by adequate software controls and is confirmed before the training session.

**C. Bases for Requested Exemption**

The requested exemption is consistent with the requirements of 10 CFR 55.11 and should be granted. First, in accordance with section 55.11, it is clear from the discussion herein that the exemption sought by Duke Energy for CNS is authorized by law, and will not endanger life or property and is otherwise in the public interest.

- (1) Authorized by Law. As discussed above, exemptions from 10 CFR 55 are expressly authorized by 10 CFR 55.11.
- (2) Endanger Life or Property. The proposed exemption from the Operators' License requirements for control manipulations that affect the reactivity or power level will not endanger life or property because of use of a plant-referenced simulator facility essentially replicates the experience received from the plant. Use of a plant-referenced simulator facility for these control manipulations is appropriate based on improvements in simulator technology and successful experience in using plant-referenced simulators. The plant-referenced simulator at CNS provides accurate and validated operator training and examination scenarios that convey realism in reactivity control manipulations, other normal and abnormal procedure operations, complex plant operations, and emergency operating procedure evolutions, including simultaneous task management and faulted conditions. Performance of control manipulations that affect reactivity or power level constitute only a small part of an applicant's preparedness to perform licensed duties. As such, adequate protection of the public health and safety is provided.
- (3) Otherwise in the Public Interest. The proposed exemption is in the public interest because the exemption will promote more effective plant operating experience for initial license applicants by allowing use of the simulation facility in lieu of the actual plant to satisfy the license eligibility requirements. Use of the simulator will also allow for enhanced training through a wider range of available operation in an environment that is more conducive to individualized instruction. Additionally, there are cost savings associated with using the simulator in lieu of the plant particularly during periods of steady state operation thus assisting in supplying the public with a consistent and reliable power source.

**D. Simulator Assessment**

Although, plant-referenced simulator facilities are for the most part state of the art, the NRC has identified two areas of concern with respect to considering a plant-referenced simulator suitable for

fulfilling the requirements of a license applicant. The first area is that the reactor core modeled on the simulator represents the actual reactor core that will exist in the plant at the time that the applicant is tested for a license. Second, appropriate testing of the simulator performance should be done to ensure that the simulator is capable of being used without significant discrepancies or deviation from the approved scenario sequence.

In order to address these concerns, CNS shall comply with the following items before utilizing the plant-referenced simulator for control manipulations.

- (1) CNS will ensure that the plant-referenced simulator utilizes models relating to nuclear and thermal-hydraulic characteristics that replicate the core load that exists in the reference core, Unit 1, as it will exist following the upcoming Unit 1 refueling outage. Credit shall only be taken for control manipulations performed on the updated simulator model. This is done in accordance with current site procedures which require an engineering review of each core cycle reload to determine when the simulator core model will be upgraded to match the Unit 1 cycle reload.
- (2) Simulator fidelity will be demonstrated so that significant control manipulations are completed without procedural exceptions, simulator performance exceptions, or deviation from the approved training scenario sequence. This simulator fidelity will be demonstrated prior to first use of a training scenario for control manipulations. This demonstration will be appropriately documented in accordance with Training Department procedures. This demonstration will be designed to ensure to the extent practicable that the simulator responds similar to the reference plant.

### **III. Summary and Conclusion**

10 CFR 55 addresses Operators' License requirements. Exemptions are provided under the provisions of 10 CFR 55.11. The exemption requested is consistent with Section 55.11 of the Commission's regulations in that it is authorized by law and will not endanger life or property and is otherwise in the public interest. Accordingly, the requested exemption should be granted.