

70-3002

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June 19, 1985

Mr. John G. Davis, Director
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. R. G. Page, Acting Chief
Uranium Fuel Licensing Branch

Re: Catawba Nuclear Station, Unit 2
Docket No. 50-414
Special Nuclear Material License Application

Dear Mr. Davis:

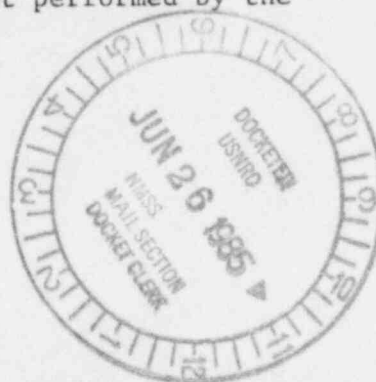
In response to the June 7, 1985 letter from Mr. Kishore Kodali, of your staff, which transmitted a draft of the Catawba Unit 2 Special Nuclear Material License, we have the following comments:

- 1) In the SER on pages 6, 9 and 15, it indicates that "The Superintendent of Operations approves all fuel handling procedures and any changes to them". This statement is overly restrictive since we may want to approve procedure changes when the Superintendent of Operations is not available. We propose this wording indicate a designee to approve fuel handling procedure changes which will allow approval by individuals such as the Superintendent of Technical Services or the Superintendent of Maintenance.
- 2) In the SER on page 9, it indicates that "Operations personnel must pass a written exam covering health physics procedures and a fuel handling test using a dummy fuel assembly". We propose deleting "using a dummy fuel assembly" as some individuals are qualified for fuel transfer activities using a real assembly under direction from a qualified individual.
- 3) In the SER on page 10 (and License Condition 15) it indicates that "All preoperational testing of fuel handling equipment, related to activities authorized by this license, shall be reviewed and approved by DPC's operations group before receipt of fuel onsite". We propose deleting "operations group". Some of the tests are not performed by the operations group.

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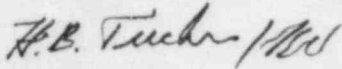
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- 4) In the SER on page 17, it indicates that radiation exposure will be monitored with "neutron dosimeters". We utilize no neutron dosimeters for normal personnel monitoring on a regular basis. Neutron exposure is not deemed to be a "problem" at Catawba. Therefore, the neutron dose equivalent will be calculated as allowed in Regulatory Guide 8.14 section C.l.c., d., or e., as applicable.
- 5) In the SER on page 15 (and License Condition 18) it indicates that "The Reactor Engineer shall verify correct fuel assembly location after insertion of each assembly into the assigned storage rack..." and "the Reactor Engineer and the Quality Control Inspector shall each sign a document assuring proper storage of each fuel assembly". We propose that "Reactor Engineer" be replaced by "Reactor Engineer or his designee" so that the Reactor Engineer does not have to be present for all fuel movement.
- 6) On page 12 of our application and page 9 of the SER it indicates that "operations personnel involved in fuel handling..." We propose deleting "Operations" and replacing it with "Qualified". This is because we will be using qualified Maintenance Support personnel to receive fuel.
- 7) On pages 14 and 15 of our application it indicates that Radiation Control Area access is formally controlled using key operated doors and controlling those keys. This is not true and this information should be deleted from our application. Areas within the RCA that may be a potential exposure hazard may have additional access controls such as key operated doors or other controls as necessary.
- 8) On page 18 of our application, the third paragraph should be changed to indicate that we calibrated our Geli detectors annually.
- 9) On page 9 of the SER (and License Condition 12) it indicates the technical qualifications for the Superintendent of Operations be in accordance with Section 4.3.1 of ANSI N18.1-1971. This requirement should be deleted or changed to reflect the approved requirements as delineated in FSAR Section 13.1.3.1.(b), (Attached).

Mr. John G. Davis, Director
June 19, 1985
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If there are any questions regarding this application, please contact
Mr. Roger W. Ouellette at (704)373-7530.

Very truly yours,



Hal B. Tucker

RWO:slb

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
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Atlanta, Georgia 30323

Robert Guild, Esq.
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NRC Resident Inspector
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(a) Station Manager

The station Manager shall have a minimum of ten years of responsible nuclear or fossil station experience, of which a minimum of three years shall be nuclear station experience. A maximum of four years of the remaining seven years of experience may be fulfilled by academic training on a one-for-one, time basis. To be acceptable, this academic training shall be in an engineering or scientific field generally associated with power production. The station Manager shall have acquired the experience and training normally required for examination by the NRC for a Senior Reactor Operator license, whether or not the examination is taken.

(b) Superintendent of Operations

The Superintendent of Operations shall have a minimum of eight years of responsible nuclear or fossil station experience, of which a minimum of three years shall be nuclear station experience. A maximum of two years of the remaining five years of experience may be fulfilled by academic training, or related technical training, on a one-for-one, time basis. The Superintendent of Operations shall hold or have held a Senior Reactor Operator license.

(c) Superintendent of Technical Services

The Superintendent of Technical Services should have a minimum of eight years of responsible nuclear or fossil station experience, of which a minimum of one year shall be nuclear station experience. A maximum of four years of the remaining seven years of experience should be fulfilled by satisfactory completion of academic training.

(d) Superintendent of Maintenance

The Superintendent of Maintenance shall have a minimum of seven years of responsible nuclear or fossil station experience, or applicable industrial experience, of which a minimum of one year shall be nuclear station experience. A maximum of two years of the remaining six years of experience may be fulfilled by satisfactory completion of academic or related technical training on a one-for-one time basis. The Superintendent of Maintenance should also have non-destructive testing familiarity, craft knowledge, and an understanding of electrical, pressure vessel and piping codes.

(e) Operating Engineer

An Operating Engineer shall have a minimum of a high school diploma, or equivalent, and four years of responsible nuclear or fossil station experience, of which a minimum of one year shall be nuclear station experience. A maximum of two years of the remaining three years of experience may be fulfilled by academic or related technical training on a one-for-one, time basis. An Operating Engineer shall hold a Senior Reactor Operator license.

1. Station Manager

The Station Manager exercises overall managerial and supervisory responsibility for the safe operation of the plant and its equipment. He is responsible for compliance with all NRC regulations and license conditions.

2. Superintendent of Operations

The Superintendent of Operations is responsible for receipt, shipment, inspection, handling, and storage of special nuclear materials contained in fuel assemblies. The operations are performed in accordance with approved written procedures. The Superintendent of Operations approves all fuel handling procedures and any changes to them. ^{or his designee}

3. Reactor Engineer

The Reactor Engineer is designated as the Nuclear Fuels Custodian at CNS, Unit 2. Being such, he is responsible for the following activities:

- a) Restrict the use of the station's special nuclear materials to locations and purposes authorized by the license(s).
- b) Approval of all fuel storage locations and transfers.
- c) Maintaining documentation concerning the receipt, shipment, inventory, accidental loss or diversion and transfer of special nuclear materials within the station's purview.

In the application, DPC specified the minimum qualifications for the position of Station Health Physicist shall be equivalent to those stated in Regulatory Guide 1.8, "Personnel, Selection, and Training" for Radiation Protection Manager. The person presently serving in this capacity at CNS, Unit 2 does not have a degree in science or engineering as required by Regulatory Guide 1.8. Based on a review of the person's prior extensive experience in radiation protection, the NRC staff recommends granting an exemption from the educational requirements for Regulatory Guide 1.8, for Radiation Protection Manager.

DPC did not commit to the minimum qualifications for CNS, Unit 2 Station Manager, Superintendent of Operations, Reactor Engineer, and System Health Physicist. Accordingly, Conditions 11, 12, 13, and 14 are recommended to specify the minimum qualifications for these positions and shall read as follows:

Condition 11. The minimum technical qualifications for the Station Manager shall be in accordance with Section 4.2.1, "Plant Manager," ANSI N18.1-1971.

Condition 12. The minimum technical qualifications for Superintendent of Operations shall be in accordance with ~~Section 4.3.1,~~
~~"Supervisors Requiring AEC Licenses," ANSI N18.1-1971,~~
 the Catawba FSAR Section 13.1.3.1 (b).

Condition 13. The minimum technical qualifications for Reactor Engineer shall be in accordance with Section 4.4.1, "Reactor Engineering," ANSI N18.1-1971.

Condition 14. The minimum technical qualifications for System Health Physicist shall be in accordance with the requirements for "Radiation Protection Manager", Regulatory Guide 1.8, September 1975.

C. Training

Training is conducted to ensure that all ~~operations~~ ^{qualified} personnel involved in fuel handling participate in a formal training program. The Superintendent of Operations is responsible for developing and implementing the formal training program. Topics covered in DPC's training program include the basics of radiation, health physics, fire safety, and emergency response. Operations personnel must pass a written exam covering health physics procedures and a fuel handling test. ~~using a dummy fuel assembly~~

The staff has concluded that based on the applicant's radiation safety and fuel handling training programs, the licensee can responsibly carry out the activities for which a license is requested.

D. Administrative Procedures

Administrative procedures for the control and handling of nuclear fuel are reviewed and approved by DPC's operations group. These procedures and any changes to them require review and approval by CNS, Unit 2 Superintendent of Operations. ^{or his designee}

VI. NUCLEAR CRITICALITY SAFETY

The applicant requests authorization to store fuel assemblies in their shipping containers in the fuel receiving area, in the New Fuel Storage Vault, and in the Spent Fuel Storage Facility.

A. Fuel Handling

Since, DPC did not commit to preoperational testing of all fuel handling equipment related to activities authorized by this license, the staff therefore recommends that the following license condition be added:

Condition 15. All preoperational testing of fuel handling equipment, related to activities authorized by this license, shall be reviewed and approved by DPC ~~operations group~~ before receipt of fuel onsite. This includes the testing of the following:

- a. New Assembly Handling Fixture
- b. Rod Cluster Control Assembly (RCCA)
Handling Fixture
- c. New Fuel Elevator
- d. Spent Fuel Pool Manipulator Crane
- e. Indexing of Spent Fuel Pool
Manipulator Crane
- f. Whiting 10 Ton Crane

will not be placed closer together in the Spent Fuel Storage Facility than those in a checkerboard pattern. Therefore, Condition 18 is recommended to provide the required assurance; namely:

Condition 18. New fuel assemblies may be stored in the Spent Fuel Storage Facility subject to the following additional conditions:

- a. The maximum U-235 enrichment shall be 3.15 w/o.
- b. The fuel assemblies shall be stored in a checkerboard pattern.
- c. The Reactor Engineer ^{or his designee} shall verify correct fuel assembly location after insertion of each assembly into the assigned storage rack in accordance with a prepared written procedure approved by the Superintendent of Operations.
- d. An independent loading verification shall be made by a Quality Control Inspector.
- e. The Reactor Engineer ^{or his designee} and the Quality Control Inspector shall each sign a document assuring proper storage of each fuel assembly.

D. Exemption from Criticality Alarm Requirements

The licensee has requested, pursuant to 10 CFR 70.24(d), an exemption from the provisions of 10 CFR 70.24. Because of the inherent features associated with the storage and inspection of unirradiated fuel containing uranium

enriched to less than 5% in the U-235 isotope when no fuel processing activities are to be performed and the inherent features in handling limited quantities of other radioactive materials, the staff hereby determines that granting such an exemption will not endanger life or property. This exemption is authorized pursuant to 10 CFR 70.²/₄. It is recommended that the exemption be identified as Condition 19.

Condition 19. The licensee is hereby exempted from the provisions of 10 CFR 70.24 insofar as this section applies to materials held under this license.

VII. RADIATION SAFETY

DPC is committed, consistent with the recommendation of Regulatory Guide 8.8, to establishing a program to maintain occupational and general public exposure as low as reasonably achievable (ALARA). It is the responsibility of the Station Health Physicist to implement the established radiation safety program to attain this goal. The System Health Physicist will periodically audit the effectiveness and adequacy of such a program.

Since all radioactive material, including fresh fuel assemblies, are sealed sources, the principal exposure pathway to an individual is via external radiation. For a low-enriched uranium fuel bundle (<4% U-235 enrichment), the exposure rate at 1 foot from the surface is normally less than 1 mr/hr; therefore, it is estimated that the exposure level to workers from these sources

would be less than 25% of the maximum permissible exposure specified in 10 CFR Part 20. All other special nuclear materials requested by the licensee will also represent no threat to plant personnel or to the environment because of the small quantities of radioactive material involved.

At CNS, Unit 2, all persons subject to occupational radiation exposures will be monitored in accordance with 10 CFR Part 20.202. This is done by using TLD dosimeters, ~~neutron dosimeters~~ and self reading dosimeters. Individual exposures will be evaluated daily from self reading dosimeters ^{and} ~~monthly~~ TLDs ~~and neutron dosimeters~~ in accordance with guidance in Regulatory Guide 8.14, "Personnel Neutron Dosimeter." An administrative limit of 1.0 rem per quarter for personnel has been established to ensure that the regulatory limits are not exceeded.

Storage of other radioactive materials (other than non-irradiated fuel) will be in a locked storage area. Access to these special nuclear materials shall be under the authority and control of the CNS, Unit 2 Station Health Physicist.

Annex A, "License Condition for Leak Testing Sealed Plutonium Sources," has been adopted as a Branch Technical Position and will be incorporated as License Condition 20. Accordingly, Condition 20 shall read as follows:

Condition 20. The licensee shall comply with provisions of Annex A, "License Condition for Leak Testing Sealed Plutonium Sources."

XII. RECOMMENDATIONS

The staff recommends approval of the application and its supplement subject to the following conditions which the staff finds are appropriate to protect health or to minimize danger to life or property.

- Condition 11. The minimum technical qualifications for the Station Manager shall be in accordance with Section 4.2.1, "Plant Manager," ANSI N18.1-1971.
- Condition 12. The minimum technical qualifications for Superintendent of Operations shall be in accordance with Section ~~4.3.1, "Supervisors Requiring AEC Licenses," ANSI N18.1-1971~~ ^{13.1.3.1 (b) of} the Catawba FSAR.
- Condition 13. The minimum technical qualifications for Reactor Engineer shall be in accordance with Section 4.4.1, "Reactor Engineering," ANSI N18.1-1971.
- Condition 14. The minimum technical qualifications for System Health Physicist shall be in accordance with requirements for "Radiation Protection Manager", Regulatory Guide 1.8, September 1975.
- Condition 15. All preoperational testing of fuel handling equipment, related to activities authorized by this license, shall be reviewed and approved by DPC ~~(s operations group)~~ before receipt of fuel onsite. This includes testing of the following:

Condition 18. New fuel assemblies may be stored in the Spent Fuel Storage Facility subject to the following additional conditions:

- a. The maximum U-235 enrichment shall be 3.15 w/o.
- b. The fuel assemblies shall be stored in a checkerboard pattern.
- c. The Reactor Engineer^{or his designee} shall verify correct fuel assembly location after insertion of each assembly into the assigned storage rack in accordance with a prepared written procedure approved by the Superintendent of Operations.
- d. An independent loading verification shall be made by a^{or his designee} Quality Control Inspector.
- e. The Reactor Engineer^{or his designee} and the Quality Control Inspector shall each sign a document assuring proper storage of each fuel assembly.

Condition 19. The licensee is hereby exempted from the provisions of 10 CFR 70.24 insofar as this section applies to materials held under this license.

Condition 20. The licensee shall comply with provisions of Annex A, "License Condition for Leak Testing Sealed Plutonium Sources."

Condition 21.

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11. The minimum technical qualifications for the Station Manager shall be in accordance with Section 4.2.1, "Plant Manager", ANSI N18.1-1971.
12. The minimum technical qualifications for Superintendent of Operations shall be in accordance with Section ~~4.3.1, "Supervisors Requiring AEC Licenses",~~
ANSI N18.1-1971. ^{13.1.3.1 (b) of the Catawba FSAR.}
13. The minimum technical qualification for ~~Reactor~~ Reactor Engineer shall be in accordance with Section 4.4.1, "Reactor Engineering", ANSI N18.1-1971.
14. The minimum technical qualifications for System Health Physicist shall be in accordance with requirements for "Radiation Protection Manager", Regulatory Guide 1.8, September 1975.
15. All preoperational testing of fuel handling equipment, related to activities. Authorized by this license, shall be reviewed and approved by ~~OPC's operations group~~ before receipt of fuel onsite. This includes the testing of the following:
 - a. New Assembly Handling Fixture
 - b. Rod Cluster Control Assembly (RCCA) Handling Fixture
 - c. New Fuel Elevator
 - d. Spent Fuel Pool Manipulator Crane
 - e. Indexing of Spent Fuel Pool Manipulator Crane
 - f. Whiting 10 Ton Crane
 - g. New Fuel Storage Racks in the New Fuel Storage Vault, and
 - h. Spent Fuel Storage Racks in the Spent Fuel Storage Facility

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16. a. No more than two fuel assemblies shall be out of approved shipping containers or fuel assembly storage racks at any one time.
- b. The minimum edge-to-edge distance between the two fuel assemblies, the shipping container array, and the storage rack arrays shall be 12 inches.
17. Fuel assemblies shall be stored in such a manner that water would drain freely from the assemblies in the event of flooding and subsequent draining of the fuel storage area.
18. New fuel assemblies may be stored in the Spent Fuel Storage Facility subject to the following conditions:
- a. The maximum U-235 enrichment shall be 3.15 w/o.
- b. The fuel assemblies shall be stored in a checkerboard pattern.
- c. The Reactor Engineer ^{or his designee} shall verify correct fuel assembly location after insertion of each assembly into the assigned storage rack in accordance with a prepared written procedure approved by the Superintendent of Operations ^{or his designee}.
- d. An independent loading verification shall be made by a Quality Control Inspector.
- e. The Reactor Engineer ^{or his designee} and the Quality Control Inspector shall each sign a document assuring proper storage of each fuel assembly.
19. The licensee is hereby exempted from the provisions of 10 CFR 70.24 insofar as this section applies to materials held under this license.
20. The licensee shall comply with provisions of Annex A, "License Condition for Leak Testing Sealed Plutonium Sources."

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