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APPLICANT: Duke Power Company (DPC)  
North Carolina Municipal Power Agency Number 1  
North Carolina Electric Membership Corporation  
Saluda River Electric Cooperative, Inc.  
Piedmont Municipal Power Agency

FACILITY: Catawba Nuclear Station (CNS), Unit 2  
York County, South Carolina

SUBJECT: ENVIRONMENTAL ASSESSMENT - LICENSE APPLICATION TO RECEIVE NEW  
FUEL

#### Background

By letter dated June 20, 1984 and its supplement dated January 18, 1985, Duke Power Company (DPC), acting on its own behalf and as agents for the above utilities applied for an NRC license to permit the receipt, possession, inspection, and storage of special nuclear material in the form of unirradiated nuclear fuel assemblies. In addition, DPC as part of the license application, seeks authorization to receive, possess, inspect, and store U-235 fission chambers and a Pu-Be neutron source. The materials are for eventual use in CNS, Unit 2. In accordance with 10 CFR 51.21, the NRC has prepared this assessment of the environmental impacts that may be caused by issuance of the requested license. Because of the form and small amount (gram quantities) of nuclear materials contained in the fission chambers and Pu-Be neutron source, storage of these materials will pose no threat to the environment. Therefore, the discussion below will be limited to assessing the potential for environmental impacts resulting from the storage of new fuel assemblies at CNS, Unit 2.

#### The Proposed Action

The proposed action is issuance of a license pursuant to 10 CFR 70 that will authorize DPC to receive, possess, inspect, and store 196 fresh fuel assemblies at CNS, Unit 2. The license has been requested by June 1, 1985, and would be effective until it can be superseded by DPC's operating license under 10 CFR 50. The fuel assemblies contain uranium dioxide (UO<sub>2</sub>) pellets that have a maximum uranium-235 enrichment of 3.15 percent by weight and are encapsulated in zircaloy tubing. Issuance of the license would result in the receipt, possession, inspection, and storage of the unirradiated fuel assemblies at CNS, Unit 2. The transport of new fuel to CNS, Unit 2, will be the responsibility of the fuel fabricator. However, the proposed license would authorize the applicant to transport, or deliver to a carrier for transport, the assemblies in approved packages if this should become necessary (e.g., to return defective fuel to the manufacturer).

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### Need for the Proposed Action

The applicant proposes to receive and store fresh fuel prior to issuance of the Part 50 operating license in order to inspect the assemblies and to finalize fuel preparation (e.g., add necessary hardware) needed to load the fuel into the reactor core vessel. Actual core loading, however, will not be authorized by the proposed license. Early completion of this fuel handling will help avoid delays in the CNS, Unit 2, startup once its operating license is issued.

### Alternatives to the Proposed Action and their Environmental Impacts

Alternatives to the proposed action include complete denial of DPC's application. Assuming the operating license will eventually be issued, denial of the storage only license now would merely postpone new fuel receipt at CNS, Unit 2. Such action, as well as any other alternative that can be imagined, would not present an environmental advantage because, as discussed below, no environmental impacts are expected to result from the proposed action.

### Environmental Impacts of the Proposed Action

A Final Environmental Statement (NUREG-0921) associated with the full-scale operation of CNS, Unit 2, has already been issued by the NRC. Based on the evaluation in this statement, the environmental impacts of plant operation subject to proposed conditions for environmental protection are expected to be small. New fuel receipt and storage is only a small part of CNS, Unit 2's, overall operation that will eventually include handling of irradiated fuel which is significantly more hazardous. Accordingly, the environmental impact from handling unirradiated fuel is expected to be very minor.

Once at CNS, Unit 2, the new fuel will be received at the Fuel Building. In the Fuel Building, the new fuel will be stored temporarily in their shipping containers until they are to be removed and placed in their assigned storage locations. These storage locations are the New Fuel Storage Vault located in the New Fuel Storage Building and the spent fuel pool located in the Spent Fuel Storage Facility of CNS, Unit 2. The design of these storage locations, combined with plant procedures, will ensure acceptable protection of the fuel assemblies from excessive physical damage either under normal or abnormal conditions. Once placed in their storage locations, the new fuel assemblies will undergo inspection for contamination and damage. The presence of engineered-safety features and administrative controls minimize the likelihood of an accident situation occurring during fuel handling activities. Only a small amount, if any, of radioactive waste may be generated during this handling (e.g., smear papers or contaminated package material) and any waste that is produced will be properly stored onsite until it can be shipped to a licensed disposal facility.

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In the event the applicant must return assemblies to the fuel fabricator, all packaging and transport of fuel will be in accordance with 10 CFR 71. The package will meet NRC approval requirements for normal conditions of transport and hypothetical accident conditions. No significant external radiation hazards are associated with the unirradiated assemblies because the radiation level from the clad fuel pellets is low and because the shipping packages must meet the external radiation standards in 10 CFR 71. Therefore, any shipment of unirradiated fuel by the applicant is expected to have an insignificant environmental impact.

In the unlikely event that an assembly (either within or outside its shipping container) is dropped during transfer, the fuel cladding is not expected to rupture. Even if the fuel rod cladding were breached and the pellets were released, an insignificant environmental impact would result. The fuel pellets are composed of a ceramic  $UO_2$  that have been pelletized and sintered to a very high density. In this form, release of  $UO_2$  aerosol is highly unlikely except under conditions of deliberate grinding. Additionally,  $UO_2$  is soluble only in acid solution so dissolution and release to the environment are extremely unlikely.

All fuel handling activities will be in accordance with approved procedures to assure nuclear criticality and radiation safety. Safety will be further assured by the presence of redundant engineering safeguards. Therefore, the proposed fuel handling and storage activities are critically safe (see the Safety Evaluation Report supporting this license) and no environmental impacts from an accidental criticality are expected.

### Conclusion

Based upon the information presented above, the environmental impacts associated with new fuel storage at CNS, Unit 2, are expected to be insignificant. Essentially no effluents, liquid or airborne, will be released and acceptable controls will be implemented to prevent a radiological accident. Therefore, in accordance with 10 CFR 51.31, a Finding of No Significant Impact is considered appropriate for this action.

Original signed by:  
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