

October 15, 1991

Mr. John L. Skolds  
Vice President, Nuclear Operations  
South Carolina Electric & Gas Company  
Virgil C. Summer Nuclear Station  
P.O. Box 88  
Jenkinsville, South Carolina 29065

Dear Mr. Skolds:

SUBJECT: ENVIRONMENTAL ASSESSMENT REGARDING EXEMPTION FROM 10 CFR 50.46(a)(1)(i)  
10 CFR 50.44(a), AND APPENDIX K TO 10 CFR PART 50 - VIRGIL C. SUMMER  
NUCLEAR STATION, UNIT NO. 1 (TAC NO. M79121)

Enclosed for your information is a copy of an Environmental Assessment (EA) and Finding of No Significant Impact regarding your request for amendment dated November 16, 1990. This EA supports the exemptions to 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50 that are necessary before your requested amendment can be issued. This amendment and these exemptions will allow the use of Zirlo clad fuel in the reactor instead of the Zircaloy clad fuel specified in the rules.

Sincerely,

Original signed by:

George F. Wunder, Project Manager  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosure:  
Environmental Assessment

cc w/enclosure:  
See next page

\*See Previous Concurrence

OFC	: LA: PD21: DRPR	: PM: PD21: DRPR	: *OGC	: D: PD21: DRPR	:
NAME	: PAnderson	: GWunder: ln	: MYoung	: EAdensam	:
DATE	: 9/27/91	: 09/27/91	: 9/24/91	: 10/15/91	:

OFFICIAL RECORD COPY  
Document Name: SUMMER 79121 EA

9111190452 911015  
PDR ADOCK 05000395  
P PDR

**NRC FILE CENTER COPY**

*[Handwritten signatures and initials]*  
111

Mr. John L. Skolds  
South Carolina Electric & Gas Company

Virgil C. Summer Nuclear Station

cc:

Mr. R. J. White  
Nuclear Coordinator  
S.C. Public Service Authority  
c/o Virgil C. Summer Nuclear Station  
P. O. Box 88 (Mail Code 802)  
Jenkinsville, South Carolina 29065

J. B. Knotts, Jr., Esq.  
Bishop, Cook, Purcell  
and Reynolds  
1400 L Street, N.W.  
Washington, D. C. 20005-3502

Resident Inspector/Summer NPS  
c/o U.S. Nuclear Regulatory Commission  
Route 1, Box 64  
Jenkinsville, South Carolina 29065

Regional Administrator, Region II  
U.S. Nuclear Regulatory Commission,  
101 Marietta Street, N.W., Suite 2900  
Atlanta, Georgia 30323

Chairman, Fairfield County Council  
P. O. Box 293  
Winnsboro, South Carolina 29180

Mr. Heyward G. Shealy, Chief  
Bureau of Radiological Health  
South Carolina Department of Health  
and Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201

South Carolina Electric & Gas Company  
Mr. A. R. Koon, Jr., Manager  
Nuclear Licensing  
Virgil C. Summer Nuclear Station  
P. O. Box 88  
Jenkinsville, South Carolina 29065

Distribution:

Docket File

NRC & Local PDRs

PD21 Reading - Summer

S. Varga	14E4
G. Lainas	14H1
E. Adensam	14B20
P. Anderson	14B20
G. Wunder	14B20
OGC	15B18
E. Jordan	MNBB 3701
ACRS (10)	
GPA/PA	
L. Reyes	Region II

cc: Plant Service List

UNITED STATES NUCLEAR REGULATORY COMMISSIONSOUTH CAROLINA ELECTRIC & GAS COMPANYSOUTH CAROLINA PUBLIC SERVICE AUTHORITYDOCKET NO. 50-395ENVIRONMENTAL ASSESSMENT AND FINDING OFNO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of exemptions from the provisions of: (1) 10 CFR 50.46, which requires the calculation of emergency core cooling system (ECCS) performance for reactors with Zircaloy clad fuel; (2) 10 CFR 50.44, which gives requirements to control the hydrogen generated by Zircaloy clad fuel after a postulated loss-of-coolant-accident (LOCA); and (3) Appendix K to 10 CFR Part 50, which presumes the use of Zircaloy fuel when doing calculations for energy release, cladding oxidation and hydrogen generation after a postulated LOCA, to South Carolina Electric & Gas Company and South Carolina Public Service Authority, the licensees for V. C. Summer Nuclear Power Station, Unit No. 1 (Summer Station), located in Fairfield County, South Carolina.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The proposed action would allow the licensee to use fuel assemblies whose cladding composition falls outside the definition of Zircaloy in the cited regulations. These assemblies would be loaded into the Summer Station reactor during the refueling outage in the fall of 1991.

The licensee applied for an amendment to allow the use of other than Zircaloy clad fuel by letter, dated November 16, 1990. The exemption is being undertaken on the Commission's own initiative.

#### The Need for the Proposed Action

The exemption under consideration is needed because 10 CFR 50.46(a)(1)(i) and Appendix K to 10 CFR Part 50 require the demonstration of adequate ECCS performance for light-water reactors that contain fuel consisting of uranium oxide pellets enclosed in Zircaloy tubes; furthermore, 10 CFR 50.44(a) addresses requirements to control hydrogen generated by Zircaloy fuel after a postulated LOCA. Since the cladding the licensee proposed to use in their November 16, 1990, amendment request falls outside the definition of Zircaloy, the Commission, on its own initiative, took into consideration exemptions from 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50. The Commission believes that special circumstances exist since application of the rule in this case would not achieve the underlying purpose of the rule. The underlying purpose of 10 CFR 50.46 and Appendix K to 10 CFR Part 50 is to establish requirements for emergency core cooling systems. The underlying purpose of 10 CFR 50.44 is to control hydrogen generated by the metal/water reaction after a postulated LOCA, regardless of whether that metal is Zircaloy or Zirlo. The licensee addressed the safety impact of using the new fuel in its amendment application, and the staff evaluated this impact in its Safety Evaluations dated July 1, 1991, and October 9, 1991. These evaluations concluded that the facility can continue to comply with the purpose of the appropriate regulation with Zirlo clad fuel. Therefore, the underlying purpose of the rule has been fulfilled.

Environmental Impacts of the Proposed Action:

With regard to potential radiological impacts to the general public, the exemption under consideration involves features located entirely within the restricted area as defined in 10 CFR Part 20. It does not affect the potential for radiological accidents and does not affect radiological plant effluents. The new fuel assemblies meet the same design bases as the fuel that is currently in the reactor. No safety limits have been changed or setpoints altered as a result of the use of these new assemblies. The FSAR analyses are bounding for the new assemblies, as well as for the rest of the core. The advanced zirconium-based alloys have been shown through testing to perform satisfactorily under conditions representative of a reactor environment and the material properties of Zirlo and Zircaloy are very similar. The exemption under consideration, therefore, does not affect the consequences of radiological accidents; consequently, the Commission concludes that there are no significant radiological impacts associated with the exemption.

With regard to the potential environmental impact associated with the transportation of the Zirlo clad fuel assemblies, the advanced cladding has no impact on previous assessments determined in accordance with 10 CFR 51.52.

With regard to non-radiological impacts, the exemption under consideration does not effect non-radiological plant effluents and has no other environmental impact. Therefore, the Commission concludes that there are no significant non-radiological environmental impacts associated with the exemption.

Alternative to the Proposed Action:

Since the Commission has concluded that there are no significant environmental effects that would result from the proposed action, any alternatives to this exemption will have either no significantly different environmental

impact or greater environmental impact. The principal alternative would be to deny the licensee's amendment request. This would not reduce environmental impacts as a result of plant operations.

Alternative use of Resources:

This action does not involve the use of resources not previously considered in the "Final Environmental Statement Related to the Operation of Virgil. C. Summer Nuclear Station, Unit No. 1," dated May 1981.

Agencies and Persons Consulted:

The staff reviewed the licensee's request and did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the exemption under consideration.

Based on the foregoing environmental assessment, the staff concludes that the proposed action will not have a significant effect on the quality of the human environment.

Dated at Rockville, Maryland this 15th day of October 1991.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:

Ronnie H. Lo, Acting Director  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

\*See previous concurrence

OFC	:LA:PD21:DRPE	:PM:PD21:DRPE	:OGC	:D:PD21:DRPE	:
NAME	:PAnderson	:GWhider	:MYoung*	:RLo	:
DATE	:10/15/91	:10/15/91	:9/24/91	:10/15/91	:

impact or greater environmental impact. The principal alternative would be to deny the licensee's amendment request. This would not reduce environmental impacts as a result of plant operations.

Alternative use of Resources:

This action does not involve the use of resources not previously considered in the "Final Environmental Statement Related to the Operation of Virgil. C. Summer Nuclear Station, Unit No. 1," dated May 1981.

Agencies and Persons Consulted:

The staff reviewed the licensee's request and did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the exemption under consideration.

Based on the foregoing environmental assessment, the staff concludes that the proposed action will not have a significant effect on the quality of the human environment.

Dated at Rockville, Maryland this 15th day of October 1991.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:

Ronnie H. Lo, Acting Director  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

\*See previous concurrence

OFC	:LA:PD21:DRPE	:PM:PD21:DRPE	:OGC	:D:PD21:DRPE	:
NAME	:PAnderson	:GUnder	:MYoung*	:RLo	:
DATE	:10/15/91	:10/16/91	:9/24/91	:10/15/91	: