

September 9, 1997

Mr. Gary J. Taylor  
Vice President, Nuclear Operations  
South Carolina Electric and Gas Company  
Virgil C. Summer Nuclear Station  
Post Office Box 88  
Jenkinsville, South Carolina 29065

SUBJECT: ISSUANCE OF EXEMPTION FROM THE REQUIREMENTS OF 10 CFR 70.24  
VIRGIL C. SUMMER NUCLEAR STATION - (TAC NO. M99278)

Dear Mr. Taylor:

By letter dated July 17, 1997, as supplemented August 6, 1997, South Carolina Electric and Gas Company requested an exemption from the requirements of 10 CFR 70.24 concerning criticality monitors.

Based upon the information provided, there is reasonable assurance that irradiated and unirradiated fuel will remain subcritical; furthermore, you maintain radiation monitors in accordance with General Design Criterion (GDC) 63. The low probability of a criticality together with your adherence to GDC 63 constitute good cause for granting an exemption from the requirements of 10 CFR 70.24.

The U.S. Nuclear Regulatory Commission, pursuant to 10 CFR 70.14, has issued the enclosed exemption for the Virgil C. Summer Nuclear Station. A copy of the exemption is being forwarded to the Office of Federal Register for publication.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,  
**(Original Signed By)**  
Allen R. Johnson, Project Manager  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosure: Exemption

cc w/enclosure: See next page

DF 01/11

DISTRIBUTION

~~Docket File~~ NDudley, EDO  
PUBLIC OGC  
Summer Files ACRS  
MMalloy JJohnson  
GHill (2) ABelisle

NRG FILE SYSTEM COPY

DOCUMENTS NAME: G:\SUM99783.EXE G:\SUM99783.EX \*Previously Concurred

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	PDII-1/PM	<input checked="" type="checkbox"/>	PDII-1/LA	<input checked="" type="checkbox"/>	PDII-1/D	<input checked="" type="checkbox"/>	SRXB(A)*	<input type="checkbox"/>	OGC*	<input type="checkbox"/>
NAME	AJohnson		EDunnington	ETD	GEDison		JLyons		APH	
DATE	08/20/97		08/26/97		08/26/97		08/12/97		08/23/97	
OFFICE	ADPE:D	<input type="checkbox"/>	AD:ADPR #2 class	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
NAME	BBoyer		RZimmerman		SCollins					
DATE	8/12/97		7/1/97		8/20/97					

OFFICIAL RECORD COPY

9709170323 970909  
PDR ADOCK 05000395  
P PDR



Mr. Gary J. Taylor  
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  
Post Office Box 88, Mail Code 802  
Jenkinsville, South Carolina 29065

J. B. Knotts, Jr., Esquire  
Winston & Strawn Law Firm  
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  
Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303

Chairman, Fairfield County Council  
Drawer 60  
Winnsboro, South Carolina 29180

Mr. Virgil R. Autry  
Director of Radioactive Waste Management  
Bureau of Solid & Hazardous Waste Management  
Department of Health & Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201

Mr. Robert M. Fowlkes, Manager  
Operations  
South Carolina Electric & Gas Company  
Virgil C. Summer Nuclear Station, Mail Code 303  
Post Office Box 88  
Jenkinsville, South Carolina 29065

Ms. April R. Rice, Manager  
Nuclear Licensing & Operating Experience  
South Carolina Electric & Gas Company  
Virgil C. Summer Nuclear Station, Mail Code 830  
Post Office Box 88  
Jenkinsville, South Carolina 29065

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 )  
SOUTH CAROLINA ELECTRIC AND )  
GAS COMPANY )  
 )  
(Virgil C. Summer Nuclear Station) )

Docket No. 50-395

EXEMPTION

I.

The South Carolina Gas and Electric Company (SCE&G or the licensee) is the holder of Facility Operating License No. NPF-12, which authorizes operation of the Virgil C. Summer Nuclear Station. The license provides, among other things, that the licensee is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

The facility consists of a pressurized-water reactor at the licensee's site located in Fairfield County, South Carolina.

II.

Section 70.24 of Title 10 of the CODE OF FEDERAL REGULATIONS, "Criticality Accident Requirements," requires that each licensee authorized to possess special nuclear material (SNM) shall maintain a criticality accident monitoring system in each area where such material is handled, used, or stored. Subsections (a)(1) and (a)(2) of 10 CFR 70.24 specify detection and

sensitivity requirements that these monitors must meet. Subsection (a)(1) also specifies that all areas subject to criticality accident monitoring must be covered by two detectors. Subsection (a)(3) of 10 CFR 70.24 requires licensees to maintain emergency procedures for each area in which this licensed SNM is handled, used, or stored and provides that (1) the procedures ensure that all personnel withdraw to an area of safety upon the sounding of a criticality accident monitor alarm, (2) the procedures must include drills to familiarize personnel with the evacuation plan, and (3) the procedures designate responsible individuals for determining the cause of the alarm and placement of radiation survey instruments in accessible locations for use in such an emergency. Subsection (b)(1) of 10 CFR 70.24 requires licensees to have a means to identify quickly personnel who have received a dose of 10 rads or more. Subsection (b)(2) of 10 CFR 70.24 requires licensees to maintain personnel decontamination facilities, to maintain arrangements for a physician and other medical personnel qualified to handle radiation emergencies, and to maintain arrangements for the transportation of contaminated individuals to treatment facilities outside the site boundary. Paragraph (c) of 10 CFR 70.24 exempts Part 50 licensees from the requirements of paragraph (b) of 10 CFR 70.24 for SNM used or to be used in the reactor. Paragraph (d) of 10 CFR 70.24 states that any licensee who believes that there is good cause why he should be granted an exemption from all or part of 10 CFR 70.24 may apply to the Commission for such an exemption and shall specify the reasons for the relief requested.

## III.

The SNM that could be assembled into a critical mass at Virgil C. Summer Nuclear Station is in the form of nuclear fuel; the quantity of SNM other than fuel that is stored on site in any given location is small enough to preclude achieving a critical mass. The Commission's technical staff has evaluated the possibility of an inadvertent criticality of the nuclear fuel at Virgil C. Summer Nuclear Station, and has determined that it is extremely unlikely that such an accident could occur if the licensee meets the following seven criteria:

1. Only one fuel assembly is allowed out of a shipping cask or storage rack at one time.
2. The k-effective does not exceed 0.95, at a 95% probability, 95% confidence level in the event that the fresh fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water.
3. If optimum moderation occurs at low moderator density, then the k-effective does not exceed 0.98, at a 95% probability, 95% confidence level in the event that the fresh fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with a moderator at the density corresponding to optimum moderation.
4. The k-effective does not exceed 0.95, at a 95% probability, 95% confidence level in the event that the spent fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water.
5. The quantity of forms of special nuclear material, other than nuclear fuel, that are stored on site in any given area is less than

the quantity necessary for a critical mass.

6. Radiation monitors, as required by General Design Criterion 63, are provided in fuel storage and handling areas to detect excessive radiation levels and to initiate appropriate safety actions.
7. The maximum nominal U-235 enrichment is limited to 5.0 weight percent.

By letter dated July 17, 1997, as supplemented August 6, 1997, the licensee requested an exemption from 10 CFR 70.24. In this request, the licensee addressed the seven criteria given above. The Commission's technical staff has reviewed the licensee's submittals and has determined that Virgil C. Summer Nuclear Station meets the criteria for prevention of inadvertent criticality; therefore, the staff has determined that it is extremely unlikely for an inadvertent criticality to occur in SNM handling or storage areas at Virgil C. Summer Nuclear Station.

The purpose of the criticality monitors required by 10 CFR 70.24(a) is to ensure that if a criticality were to occur during the handling of SNM, personnel would be alerted to that fact and would take appropriate action. The staff has determined that it is extremely unlikely that such an accident could occur; furthermore, the licensee has radiation monitors, as required by General Design Criterion 63, in fuel storage and handling areas. These monitors will alert personnel to excessive radiation levels and allow them to initiate appropriate safety actions. The low probability of an inadvertent criticality, together with the licensee's adherence to General Design Criterion 63, constitutes good cause for granting an exemption from the requirements of 10 CFR 70.24.

#### IV.

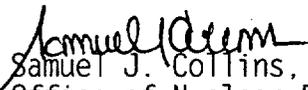
The Commission has determined that, pursuant to 10 CFR 70.14, this exemption is authorized by law, will not endanger life or property or the

common defense and security, and is otherwise in the public interest. Therefore, the Commission hereby grants the South Carolina Electric and Gas Company an exemption from the requirements of 10 CFR 70.24.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will have no significant impact on the environment (62 FR 47521).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Samuel J. Collins, Director  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,  
this 9th day of September 1997