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March 31, 2004

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Dear Sir:

Subject: VIRGIL C. SUMMER NUCLEAR STATION  
DOCKET NO. 50-395  
OPERATING LICENSE NO. NPF-12  
ANNUAL OPERATING REPORT

Enclosed is the 2003 Annual Operating Report for the South Carolina Electric & Gas Company Virgil C. Summer Nuclear Station Unit No. 1. This report is being submitted in accordance with Technical Specifications 6.9.1.4, 6.9.1.5, and Regulatory Guide 1.16.

If there are any questions, please call at your convenience.

Very truly yours,

Stephen A. Byrne

J. ARCHIE PER DIRECTION OF SAB

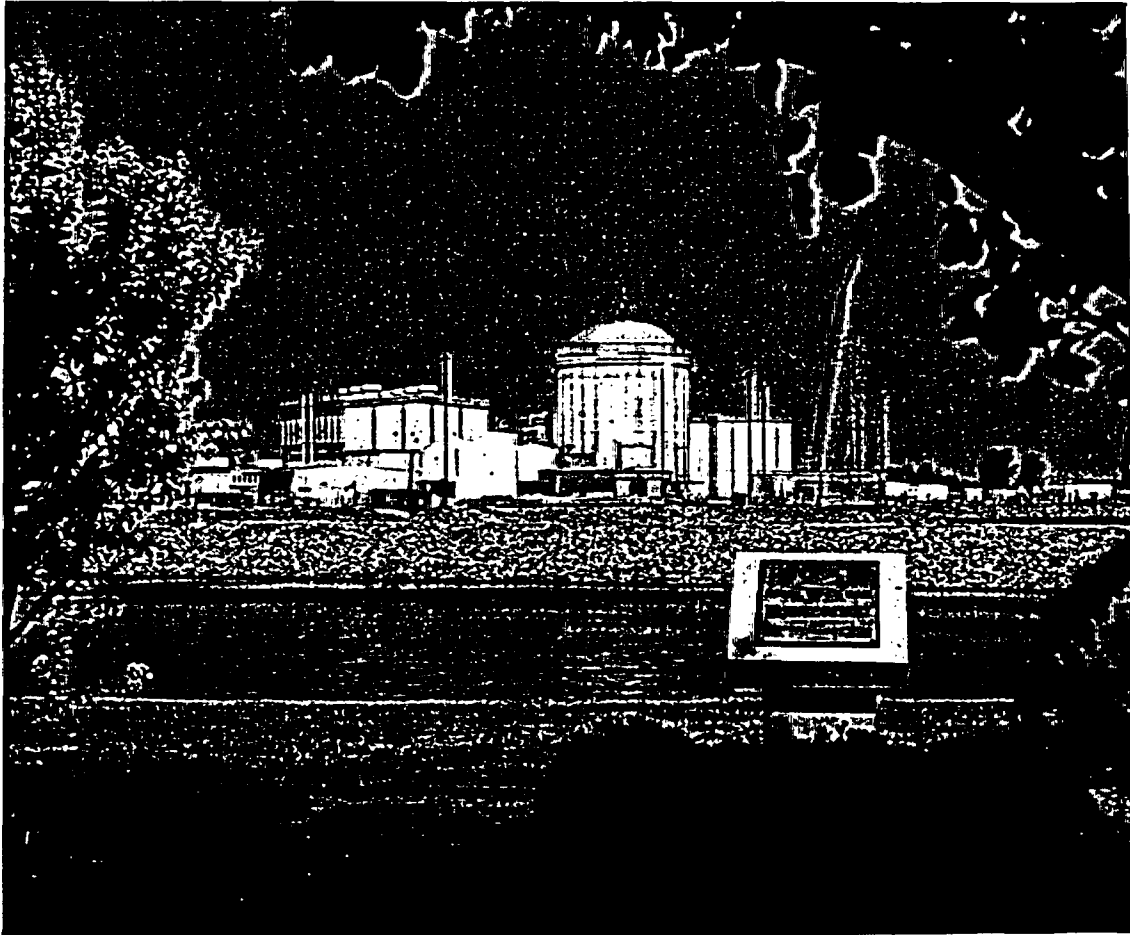
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AG001

VIRGIL C. SUMMER  
NUCLEAR STATION



2003  
ANNUAL OPERATING  
REPORT

## PREFACE

The 2003 Annual Operating Report for the Virgil C. Summer Nuclear Station is hereby submitted in accordance with Technical Specifications 6.9.1.4, 6.9.1.5, and Regulatory Guide 1.16 under Docket Number 50/395 and Facility Operating License NPF-12.

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# ANNUAL OPERATING REPORT

## 1.0 INTRODUCTION

The Virgil C. Summer Nuclear Station (VCSNS) utilizes a pressurized water reactor rated at 2900 MWT. The maximum dependable capacity is 966 Mwe.

The station is located approximately 26 miles northwest of Columbia, South Carolina.

## 2.0 OPERATIONAL DATA

For the reporting period of January 1 through December 31, 2003, the station operated at a capacity factor of 86.9 percent (using maximum dependable capacity) and a unit availability of 86.4 percent. The reactor was critical for a total of 7655.2 hours, the generator remained on line 7565 hours, and the total gross electrical energy generated for 2003 was 7650970 MWH.

The station successfully completed its fourteenth (14<sup>th</sup>) refueling outage in 46 days and 2 hours.

## 3.0 OPERATING SUMMARY

The Virgil C. Summer Nuclear Station (VCSNS) Unit No.1 operated at 100 percent power from January 1 through January 9<sup>th</sup>. On January 9<sup>th</sup>, the calorimetric computer program used to calculate the feedwater flow rate based value of reactor thermal power (Fivcals) malfunctioned. As a result of the computer program, reactor power was reduced to 99 percent power. Power was restored to 100% at 0650 on January 9<sup>th</sup>.

VCSNS operated at 100 percent power from January 9<sup>th</sup> to January 17<sup>th</sup>. On January 17<sup>th</sup> a reactor shutdown began due to the "B" reactor trip breaker being declared inoperable. On January 17<sup>th</sup> at 1510 the breaker was repaired and declared operable. The shutdown was terminated and power was restored to 100% at 1625 on January 17<sup>th</sup>.

VCSNS operated at 100 percent power from January 17<sup>th</sup> to March 7<sup>th</sup>. On March 7<sup>th</sup>, power was reduced to 92% to support quarterly control valve testing. Power was restored to 100% on March 8<sup>th</sup>.

VCSNS operated at 100% power from March 8<sup>th</sup> to May 12<sup>th</sup>. On May 12<sup>th</sup> the reactor tripped. The opening of the main generator breaker caused a turbine trip, which then resulted in a reactor trip. The main generator breaker opened due to the failure of contacts in the generator field breaker. The circuitry was repaired and modified by adding a set of backup contacts. Repairs were completed and the reactor became critical on May 14<sup>th</sup>. The main generator breaker was closed on May 15<sup>th</sup>. Power was restored to 100% on May 16<sup>th</sup>.

VCSNS operated at 100 percent power from May 16<sup>th</sup> to June 11<sup>th</sup>. On June 11<sup>th</sup>, the "B" Reheater Drain Tank level transmitter (ILT03715A) failed high causing the tank to isolate and the 1B feedwater heater to trip. Reactor power was reduced to 92% in accordance with AOP-204.1. The level transmitter was repaired and full power was restored on June 12<sup>th</sup>. VCSNS operated at 100 percent power from June 12<sup>th</sup> to June 21<sup>st</sup>. On June 21<sup>st</sup> power was reduced to 98% to perform torquing of the connectors on similar transmitters in the secondary plant. The maintenance was completed and reactor power was restored to 100% on June 21<sup>st</sup>.

VCSNS operated at 100 percent power from June 21<sup>st</sup> to October 8<sup>th</sup>. On October 8<sup>th</sup> power was reduced to 85% to support main steam safety valve testing. On October 11<sup>th</sup> at 0010 the fourteenth refueling outage began with the opening of the main generator breaker. The plant remained shutdown for the refueling outage until November 26<sup>th</sup> when the main generator breaker was closed. The main turbine was manually tripped due to high vibration on November 26<sup>th</sup>. The breaker was closed at 1011 on November 26<sup>th</sup>; however, the main turbine tripped again due to high vibration. The breaker was closed at 1622 on November 26<sup>th</sup>. Reactor power was restored to 100% on November 29<sup>th</sup>.

VCSNS operated at 100 percent power from November 29<sup>th</sup> to December 3<sup>rd</sup>. On December 3<sup>rd</sup> power was reduced to 98% to support maintenance on the feedwater heater level transmitter. The maintenance was completed and reactor power was restored to 100% on December 4<sup>th</sup>. The plant operated at 100% reactor power for the remainder of 2003.

## **Maintenance**

Attachment I, "Power Reductions Caused by Maintenance Activities," provide more detailed information on operating time lost as a result of maintenance activities.

## **Refuel 14 Summary**

The main generator breaker was opened at 0010 on October 11<sup>th</sup>, for refueling outage 14.

Major work activities included:

- Reactor Coolant Pump 'C' Seal Maintenance
- Reactor Coolant Pump 'C' Motor Replacement
- Reactor Coolant Pump 'C' Seal Injection Flange Spool Piece Replacements
- Replacement of a three Reactor Coolant Pump Motors Component Cooling Water flanges
- Component Cooling Water Heat Exchanger Inspections
- "B" Component Cooling Water Heat Exchanger Plasticcoating
- 10 Year Reactor Vessel In Service Inspection

- Reactor Containment Integrated Leak Rate Test
- Main Generator Stator Cooling Leak Repair
- Maintenance on both Emergency Diesel Generators
- Main Transformer Repair
- Reactor Vessel Upper Head Boron Inspection
- Reactor Vessel Lower Head Boron Inspection
- Both Trains of Engineered Safety Features Integrated Safeguards Testing
- Service Water Piping UT Inspection
- Reactor Building Paint Repairs
- Digital Rod Position Indication Data A Failure Repair
- Replacement of Feedwater Piping Downstream of FW Regulating Valve IFV0498

Refueling Outage 14 duration was 46 days and 2 hours. Outage planned duration was approximately 35.8 days. Personnel exposure in 2003 due to the outage was approximately 76 man-rem based on electronic dosimeters.

#### **4.0 EXPOSURES**

Attachment II consists of tables, which list the number of station, utility, and other personnel (including contract personnel) receiving exposures greater than 100 mrem/year and their associated man-rem exposure according to work and job function. The exposures reported are estimated doses based on electronic dosimeters.

#### **5.0 FAILED FUEL**

VCSNS did have indications of failed fuel in 2003.

The reactor coolant system specific activity did not exceed the 1.0 microcuries per gram dose equivalent iodine-131 specific activity or the 100/E microcuries per gram limits of Technical Specification 3.4.8, for this reporting period.

**ATTACHMENT I**

**TO**

**2003 ANNUAL REPORT**



## V. C. Summer Nuclear Station Events

### Outage or Power Reductions Caused by Maintenance Activities

<u>Date</u>	<u>Time Start</u>	<u>Cause of Event/NERCGADS* Code</u>	<u>Date</u>	<u>Time Finish</u>	<u>Duration</u>	<u>Net Capacity MWe</u>	<u>Type</u>
1/9/2003	0400 Hrs	Loss of Heat Balance (Integrated Plant Computer System)/2390	1/9/2003	0730 Hrs	3.5 Hrs	Min 968/Avg 971.3	Unplanned
1/17/2003	1443 Hrs	Reactor Trip Breaker Problem/2370	1/17/2003	1943 Hrs	5.0 Hrs	Min 918/Avg 955	Unplanned
5/12/2003	0102 Hrs	Generator Field Breaker/4740	5/16/2003	0600 Hrs	77.0 Hrs	Min 0/Avg 131	Unplanned
10/8/2003	0520 Hrs	Refuel 14/2070	10/11/2003	0010 Hrs	66.8 Hrs	Min 0/Avg 795	Planned
10/11/2003	0010 Hrs	Refuel 14/2070	11/15/2003	0910 Hrs	849.0 Hrs	Min 0/Avg 0	Planned
11/15/2003	0910 Hrs	Refuel 14 Outage Extension/2070	11/26/2003	1622 Hrs	271.2 Hrs	Min 0/Avg 0	Unplanned
11/26/2003	1622 Hrs	Refuel 14 Scheduled Ramp-up and Testing/2070	11/30/2003	0021 Hrs	80.0 Hrs	Min 0/Avg 611	Planned
12/3/2003	2307 Hrs	Feedwater Heater Level Transmitters/3502	12/4/2003	0948 Hrs	10.7 Hrs	Min 952/Avg 957	Unplanned

**ATTACHMENT II**

**TO**

**2003 ANNUAL REPORT**

SOUTH CAROLINA ELECTRIC AND GAS CO. V.C. SUMMER NUCLEAR STATION

PERSONNEL AND MAN-REM BY WORK AND DUTY FUNCTION  
 FINAL END OF YEAR REPORT FOR 2003

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL OVER 100mREM			TOTAL MAN-REM		
	STATION WORKERS	UTILITY WORKERS	CONTRACT WORKERS	STATION WORKERS	UTILITY WORKERS	CONTRACT WORKERS
<b>ROUTINE MAINTENANCE</b>						
MAINTENANCE PERSONNEL	17	0	55	6.270	0.000	18.191
OPERATIONS PERSONNEL	3	0	3	1.202	0.000	0.794
HEALTH PHYSICS PERSONNEL	9	0	3	2.073	0.000	1.028
SUPERVISORY PERSONNEL	0	0	0	0.302	0.000	0.003
ENGINEERING PERSONNEL	0	0	0	0.217	0.000	0.188
<b>SPECIAL MAINTENANCE</b>						
MAINTENANCE PERSONNEL	3	0	22	2.642	0.000	9.453
OPERATIONS PERSONNEL	4	0	2	1.268	0.000	0.458
HEALTH PHYSICS PERSONNEL	0	0	2	0.368	0.000	0.485
SUPERVISORY PERSONNEL	1	0	0	0.272	0.000	0.011
ENGINEERING PERSONNEL	0	0	0	0.267	0.000	0.078
<b>REACTOR OPERATIONS &amp; SURVEILLANCE</b>						
MAINTENANCE PERSONNEL	5	0	5	1.493	0.000	1.422
OPERATIONS PERSONNEL	2	0	0	1.672	0.000	0.135
HEALTH PHYSICS PERSONNEL	2	0	1	0.723	0.000	0.240
SUPERVISORY PERSONNEL	0	0	0	0.145	0.000	0.007
ENGINEERING PERSONNEL	0	0	0	0.074	0.000	0.009
<b>WASTE PROCESSING</b>						
MAINTENANCE PERSONNEL	0	0	0	0.029	0.000	0.027
OPERATIONS PERSONNEL	0	0	0	0.003	0.000	0.007
HEALTH PHYSICS PERSONNEL	3	0	1	0.654	0.000	0.166
SUPERVISORY PERSONNEL	0	0	0	0.023	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
<b>IN-SERVICE INSPECTION</b>						
MAINTENANCE PERSONNEL	5	0	40	1.518	0.000	14.507
OPERATIONS PERSONNEL	1	0	3	0.941	0.000	0.798
HEALTH PHYSICS PERSONNEL	5	0	0	1.184	0.000	0.156
SUPERVISORY PERSONNEL	1	0	0	0.157	0.000	0.047
ENGINEERING PERSONNEL	1	0	0	0.166	0.000	0.058
<b>REFUELING</b>						
MAINTENANCE PERSONNEL	6	0	27	1.654	0.000	9.016
OPERATIONS PERSONNEL	0	0	0	0.325	0.000	0.029
HEALTH PHYSICS PERSONNEL	0	0	1	0.192	0.000	0.461
SUPERVISORY PERSONNEL	0	0	0	0.041	0.000	0.000
ENGINEERING PERSONNEL	0	0	0	0.034	0.000	0.061
<b>TOTALS</b>						
MAINTENANCE PERSONNEL	36	0	149	13.606	0.000	52.616
OPERATIONS PERSONNEL	10	0	8	5.411	0.000	2.221
HEALTH PHYSICS PERSONNEL	19	0	8	5.194	0.000	2.536
SUPERVISORY PERSONNEL	2	0	0	0.940	0.000	0.068
ENGINEERING PERSONNEL	1	0	0	0.758	0.000	0.394
<b>GRAND TOTAL</b>	<b>68</b>	<b>0</b>	<b>165</b>	<b>25.909</b>	<b>0.000</b>	<b>57.835</b>

\*\*\*\*\* END OF REPORT \*\*\*\*\*