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95 MAR 2 P 2: 24
February 27, 1995
Refer to: RC-95-0057

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

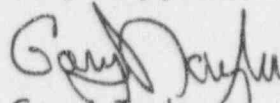
Dear Mr. Ebnetter:

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

Attached is the 1994 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,


Gary J. Taylor

RAM/GJT/nkk
Attachment

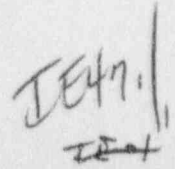
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1.0 INTRODUCTION

The Virgil C. Summer Nuclear Station (VCSNS) utilizes a pressurized water reactor rated at 2775 MWT. The unit has produced a maximum dependable capacity (MWe-Net) of 885 MWe. The plant is located approximately 26 miles northwest of Columbia, South Carolina.

2.0 OPERATIONAL DATA

For the reporting period of January 1 through December 31, 1994, the plant operated at a capacity factor of 57.3 percent (using maximum dependable capacity) and a unit availability of 68.8 percent. The reactor was critical for a total of 6090.5 hours, the generator remained on line 6023.1 hours, and the total gross electrical energy generated for 1994 was 4,701,600 MWH.

3.0 OPERATING SUMMARY

The Virgil C. Summer Nuclear Station Unit No. 1 operated at 100 percent power for the entire month of January and until February 9, when power was reduced to 65% for fuel conservation. The plant operated at 65% power for the rest of the month. As of the end of February the plant had been on line continuously for 302 days. This is a new plant record, surpassing the previous record of 279 days.

The plant was taken off line at 1524 hours on March 1, 1994, to repair hydrogen leaks in the main generator. During this outage the "B" reactor coolant pump seal was replaced and work was performed on the reactor building polar crane to support the upcoming refueling 8 outage activities.

On March 18, at 1223 hours, the main generator breaker was closed. Power was maintained at 30% for secondary water chemistry cleanup. On March 21, power was increased to 65% and maintained at that level until April 14, for fuel conservation. On April 14, power was increased to 72% and remained at 72% until May 7, for fuel conservation. On May 7, power was increased to 100%.

On June 17, power was reduced to 90% to repair an air leak on a high load steam supply valve to the moisture separator reheater. The plant was returned to full power on June 18. As a result of the power transient, the plant experienced an increased steam generator leakage rate (primary to secondary) from the "B" steam generator. (See Attachment II for a graph of the leak.)

The plant operated at 100% power until July 24, when power was reduced to 90% as part of a strategy to manage the "B" steam generator tube leak and to maintain the circulating water discharge temperature below the maximum allowable temperature. The reduced power level also helped to conserve fuel until the scheduled refueling outage. The "B" steam generator leak rate was the major plant operational restraint and continued to be monitored very closely for the rest of the operating cycle. Contingency plans were developed to address actions to be taken if the leakage rate was to significantly increase.

The plant continued to operate at 90% power until August 5, when a gradual power reduction was initiated and on August 11, a power level of 80% was established. The power reduction was made in order to further conserve fuel for the remainder of the operating cycle and to minimize the "B" steam generator tube leak rate.

On September 9, 1994, power was reduced and the main generator taken off line to commence Refueling Outage 8.

Cycle 9 initial criticality was achieved at 1012 hours on December 14th. Physics testing was completed at 1047 hours on the 15th and MODE 1 entered at 2350 hours. The generator breaker was closed at 0215 on the 16th. Additional testing was performed during the power ascension due to the steam generator replacement. 100% power was reached on December 29.

At the end of December the plant was operating at 100 percent power.

MAINTENANCE

During this reporting period 5168 maintenance work requests (MWR) were completed requiring 183,260 manhours. There were 10,165 preventive maintenance tasks and 7186 surveillance tests performed.

REFUEL 8 SUMMARY

This was a planned refueling outage with a scheduled duration of 98 days and 4 hours, with expectation that the main generator breaker would be closed on or before December 17. During this outage all three Westinghouse model D-3 steam generators were replaced with Westinghouse model Delta 75 steam generators. This required rerouting of the feedwater system piping to the upper portion of the new steam generators and removal of the feedwater prewarming system. Changing from a variable water level to a single water level in the new steam generators resulted in extensive changes to the plant instrumentation.

The combined refueling and steam generator replacement outage was completed in 97 days and 3 hours, breaker to breaker. This included eight days at the end of the outage to repair a leak on the seal injection line to "C" reactor coolant pump which was discovered on December 13 (LER 940006) during the heatup for plant startup.

The steam generator critical path replacement activities were accomplished in 38 days. This established a new record for steam generator replacement in the United States. The steam generator replacement activities were accomplished with a total man-rem dose of 224, which also set a new United States record.

In addition to refueling and steam generator replacement the following major work items were completed during the refueling 8 outage:

* Reactor Building Polar Crane Upgrade

Rebuilt the crane's mechanical brake, replaced the main and aux. hoist wire ropes, and performed a required structural modification to resolve a Whiting Corporation 10CFR21 notification.

* Motor Operated Valve Testing

The requirements of Generic Letter 89-10 initial commitments were completed. 48 motor operated valves were refurbished, 56 were dp tested, and 84 were statically tested. This established a new ITI Movats record for the number of valves worked in a single outage.

* Snubber Reduction

Removed 275 mechanical snubbers of which most were class 1 snubbers inside containment, 9 hydraulic snubbers from the steam generators, and some associated whip restraints based on NRC generic letter 87-11, "Snubber Reduction".

* On site rewind of the Main Electrical Generator

This was the first on site main generator rewind for a 4 pole unit performed by General Electric. It was also the first time induction heating was used for brazing stator bars in the field.

* Installed spare main transformer

The main transformer was replaced with a spare main transformer which had been purchased during original plant construction. This required a new extension to the bus bar cooling system.

* Reactor Coolant Pump Motor replacement

A spare reactor coolant pump motor was installed thus allowing the rotation of reactor coolant pump motors for refurbishment.

* Replacement of two Reactor Coolant Pump Seals
Replaced the mechanical seals on "A" and "C" reactor coolant pumps. The seal on "B" reactor coolant pump was replaced during the plant mini-outage in March.

4.0 EXPOSURES

Attachment I 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.

5.0 FAILED FUEL

Following core offload, two fuel rods were identified as defective by ultrasonic testing and visual inspection. The defects were debris induced. One rod in assembly K-46, was from its initial cycle in the core and the other in assembly J-64 was from its second core cycle. Assembly K-46 was reconstituted and loaded for cycle 9 and assembly J-64 was discharged.

The reactor coolant system specific activity did not exceed the 1.0 uCi/ml dose equivalent iodine-131 specific activity limit for this reporting period.

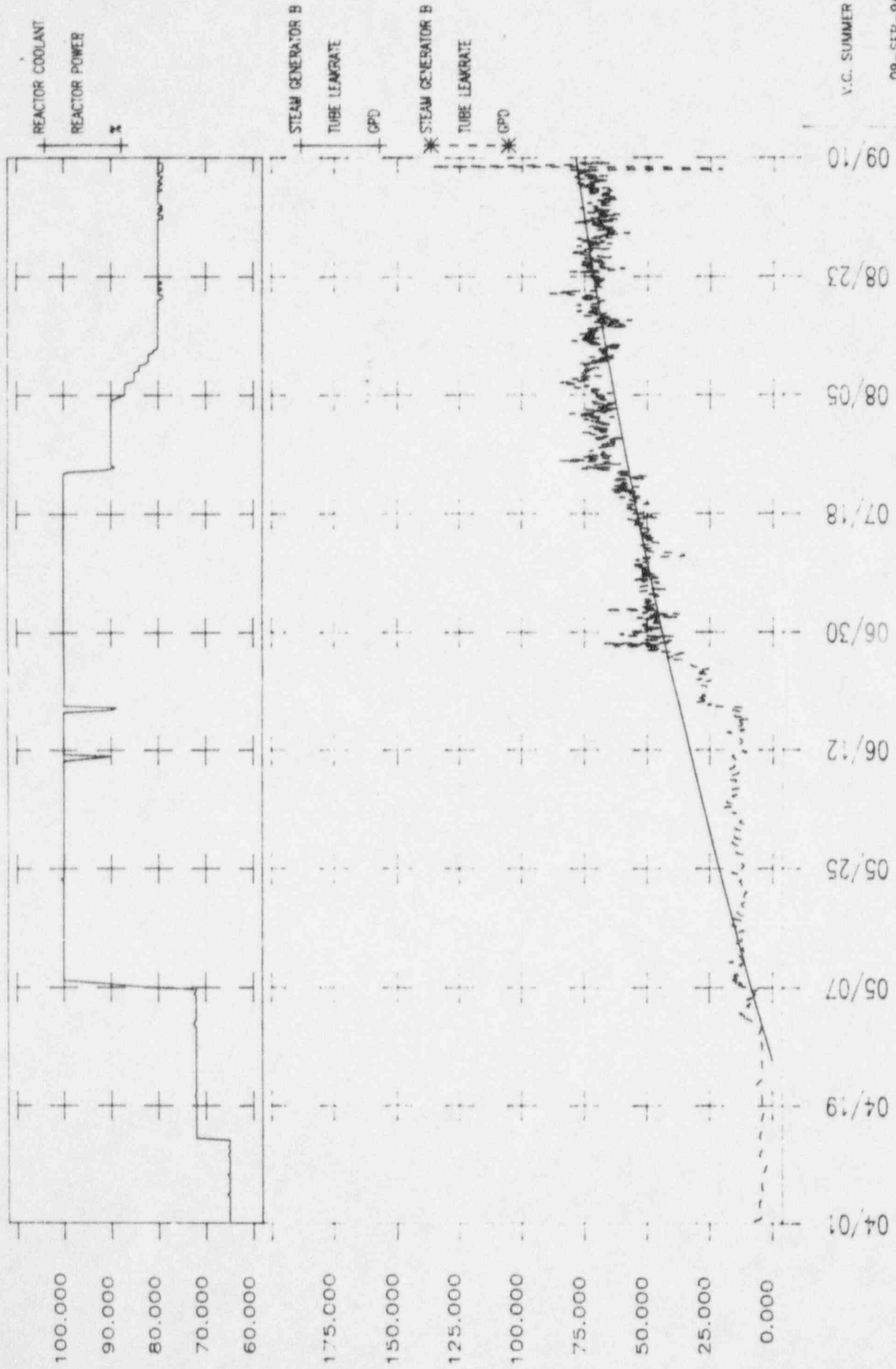
ATTACHMENT I
TO
1994 ANNUAL REPORT

PERSONNEL AND MAN-REM BY WORK AND DUTY FUNCTION
 FINAL END OF YEAR REPORT FOR 1994

WORK AND JOB FUNCTION	NUMBER OF PERSONNEL OVER 100mREM			TOTAL MAN-REM		
	STATION WORKERS	UTILITY WORKERS	CONTRACT WORKERS	STATION WORKERS	UTILITY WORKERS	CONTRACT WORKERS
ROUTINE MAINTENANCE						
MAINTENANCE PERSONNEL	47	0	146	11.773	0.026	48.736
OPERATIONS PERSONNEL	7	0	9	2.557	0.025	2.487
HEALTH PHYSICS PERSONNEL	6	0	57	1.903	0.000	17.287
SUPERVISORY PERSONNEL	0	0	1	0.290	0.000	0.383
ENGINEERING PERSONNEL	3	0	21	1.430	0.000	6.914
SPECIAL MAINTENANCE						
MAINTENANCE PERSONNEL	16	0	327	6.054	0.020	146.761
OPERATIONS PERSONNEL	5	0	2	1.675	0.000	0.811
HEALTH PHYSICS PERSONNEL	2	0	3	0.669	0.000	1.880
SUPERVISORY PERSONNEL	0	0	2	0.633	0.000	0.755
ENGINEERING PERSONNEL	1	0	104	0.994	0.000	47.135
REACTOR OPERATIONS & SURVEILLANCE						
MAINTENANCE PERSONNEL	1	0	2	0.632	0.000	1.106
OPERATIONS PERSONNEL	9	0	1	3.513	0.001	0.402
HEALTH PHYSICS PERSONNEL	6	0	53	2.506	0.000	16.073
SUPERVISORY PERSONNEL	0	0	1	0.126	0.000	0.189
ENGINEERING PERSONNEL	0	0	1	0.102	0.000	0.249
WASTE PROCESSING						
MAINTENANCE PERSONNEL	0	0	0	0.036	0.000	0.158
OPERATIONS PERSONNEL	0	0	0	0.001	0.000	0.179
HEALTH PHYSICS PERSONNEL	3	0	2	0.957	0.000	1.041
SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.015
ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
IN-SERVICE INSPECTION						
MAINTENANCE PERSONNEL	0	0	33	0.170	0.049	9.688
OPERATIONS PERSONNEL	0	0	0	0.481	0.000	0.094
HEALTH PHYSICS PERSONNEL	0	0	0	0.020	0.000	0.206
SUPERVISORY PERSONNEL	0	0	0	0.046	0.000	0.002
ENGINEERING PERSONNEL	0	0	18	0.323	0.000	5.149
REFUELING						
MAINTENANCE PERSONNEL	0	0	0	0.021	0.000	0.251
OPERATIONS PERSONNEL	0	0	0	0.085	0.000	0.108
HEALTH PHYSICS PERSONNEL	0	0	0	0.000	0.000	0.119
SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
ENGINEERING PERSONNEL	0	0	1	0.007	0.000	0.301
TOTALS						
MAINTENANCE PERSONNEL	64	0	508	18.686	0.095	206.700
OPERATIONS PERSONNEL	21	0	12	8.312	0.026	4.081
HEALTH PHYSICS PERSONNEL	17	0	115	6.055	0.000	36.606
SUPERVISORY PERSONNEL	0	0	4	1.095	0.000	1.344
ENGINEERING PERSONNEL	4	0	145	2.856	0.000	59.748
GRAND TOTAL	106	0	784	37.004	0.121	308.479

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

ATTACHMENT II
TO
1994 ANNUAL REPORT



V.C. SUMMER

09-SEP-94