NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| Virgil C. Summer Nuclear Station | 0 5 0 0 0 3 9 5 | 1 OF 0 3 |

TITLE (4)

Feedwater Regulating Valves

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) |
| 0 5 | 0 5 | 8 4 | 8 4 | - 0 2 7 | - 0 0 | 0 6 | 0 5 | 8 4 | | 0 5 0 0 0 |
| | | | | | | | | | | 0 5 0 0 0 |

| OPERATING MODE (9) | 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | |
|---|---|---|---|---|---|
| POWER LEVEL (10) | 0 6 0 | 20.402(b) | 20.405(c) | 50.73(a)(2)(iv) | 73.71(b) |
| | | 20.405(a)(1)(i) | 50.36(c)(1) | 50.73(a)(2)(v) | 73.71(c) |
| | | 20.405(a)(1)(ii) | 50.36(c)(2) | 50.73(a)(2)(vii) | X OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| | | 20.405(a)(1)(iii) | 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) | |
| | | 20.405(a)(1)(iv) | 50.73(a)(2)(ii) | 50.73(a)(2)(viii)(B) | |
| | | 20.405(a)(1)(v) | 50.73(a)(2)(iii) | 50.73(a)(2)(x) | |

VOLUNTARY REPORT

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|---|---|
| | AREA CODE |
| A. R. Koon, Asso. Mgr., Reg. Compliance | 8 0 3 3 4 5 - 5 2 0 9 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X | S V | F C V F 1 3 0 | | N | | | | | | | |
| | | | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

| | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | XXXX | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

This Voluntary Report is being submitted with respect to maintenance activities associated with the Feedwater Regulating Valves (FRV's) which resulted in a management decision to initiate a controlled shutdown on May 5, 1984.

Based on a concern of the Independent Safety Engineering Group (ISEG) upon completion of their review of the Reactor Trip document package associated with LER 84-025 (titled "Reactor Trip," dated May 25, 1984) with respect to the failure of FRV's A&B to close, the stroke closure times of the FRV's were adjusted prior to restart on May 4, 1984.

While in the process of escalating power during startup, problems were experienced with the FRV's controlling properly. In an effort to stabilize the valves, adjustments were made to the Volume Boosters which affected the valve stroke time resulting in a decision to shut down.

In order to prevent recurrence, a design modification was implemented to segregate the Volume Boosters from the "Trip Close" portion of the Control Air System on the valves. Upon completion of this modification, the FRV's were tested and verified to be operating within acceptable time limits, and the Plant was returned to power operation.



NRC Form 366
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NRC Form 366A
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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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| Virgil C. Summer Nuclear Station | 0 5 0 0 0 3 9 5 | 8 4 | — 0 2 7 | — 0 0 | 0 2 OF 0 3 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

This Voluntary Report is being submitted with respect to maintenance activities associated with the Feedwater Regulating Valves (FRV's) which resulted in a management decision to initiate a controlled shutdown on May 5, 1984.

The Licensee submitted LER 84-025 on May 25, 1984, as a result of a Reactor Trip on April 25, 1984. It was identified in the report that following the Reactor Trip, FRV's A&B did not automatically close upon the Reactor Trip coincident with Low Tavg. Maintenance Work Requests (MWR's) were initiated, repairs were made, and operation of the valves' closure upon receipt of an automatic closure signal were verified.

The Reactor Trip document package was reviewed by the Independent Safety Engineering Group (ISEG) which identified the failure of the FRV as a concern because information in sections 6.2 and 15.4.2 of the Final Safety Analysis Report (FSAR) indicates that these valves could affect the analysis for containment overpressure protection during a postulated rupture of a secondary piping inside containment. ISEG's report was reviewed by the Plant Safety Review Committee (PSRC), and the decision was made to verify valve closure stroke time.

MWR's were initiated, and the stroke closure time for the three (3) FRV's was adjusted for a closing time of 3.5 seconds minimum and 5 seconds maximum as timed from the Main Control Board. Adjustments were made, and the valves were tested to demonstrate their operability prior to the plant restart on May 4, 1984.

While in the process of escalating power during plant startup subsequent to the May 4 restart, problems were experienced with the FRV's controlling properly. In an effort to stabilize the operation of these valves, the Volume Boosters, which are part of the Control Air System for these valves, were adjusted. Because of the design of the Control Air System, adjustment to the Volume Boosters also affected the valve stroke time. Because of the adjustment to the Volume Booster on May 5, 1984, with the Plant in Mode 1, a management decision was made to shut down (mode 2) for the purpose of stroke testing the FRV's.

Upon completion of the stroke time testing on the FRV's, it was identified that the Engineering Safety Feature (ESF) Response Time for the "B" FRV (10.21 sec.) exceeded the 10 second acceptance criteria for Feedwater Isolation as required by Technical Specification Table 3.3-5. The ESF Response Time for the remaining two (2) FRV's were within their acceptance criteria.

There were no adverse consequences as a result of this event because the Feedwater Isolation Valves were operable and therefore capable of performing Feedwater Isolation upon demand. Also, an evaluation of the Safety Analysis for a Main Steam Line Break inside Containment verifies that there would be no significant adverse affects of the FRV's closing within the time frames experienced by the "B" FRV, considering the worst case single failures which includes the associated Feedwater Isolation Valve not closing.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

In order to prevent recurrence, a design modification was implemented to segregate the Volume Boosters from the "Trip Close" portion of the Control Air System on the valves. Upon completion of this modification, the FRV's were tested and verified to be operating within acceptable time limits, and the Plant was returned to power operation.

In addition to the design modification which was implemented as described above, Nuclear Engineering is conducting an evaluation of the Feedwater Isolation function with respect to equipment required versus Accident Analysis. This additional evaluation will be completed by July 31, 1984. In the interim, the FRV's will be programmatically controlled as equipment required for the Feedwater Isolation function.

RAM 7/6

~~PB 840618~~

SOUTH CAROLINA ELECTRIC & GAS COMPANY
POST OFFICE 764
COLUMBIA, SOUTH CAROLINA 29218

O. W. DIXON, JR.
VICE PRESIDENT
NUCLEAR OPERATIONS

LER
LER # 395-84027
EVENT DATE 840505
INPO RCVD DATE 840613
NSAC RCVD DATE _____

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1/1

June 5, 1984

JDH

RHR

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

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SUBJECT: Virgil C. Summer Nuclear Station
Docket No. 50/395
Operating License No. NPF-12
LER 84-027

Dear Sir:

Please find attached Licensee Event Report #84-027 (Voluntary Report) for the Virgil C. Summer Nuclear Station.

Should there be any questions, please call us at your convenience.

Very truly yours,

O. W. Dixon, Jr.

RJB:OWD/dwf
Attachment

cc: V. C. Summer
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W. A. Williams, Jr.
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