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 2

TITLE (4)
Feedwater Isolation Valve

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 7	1 7	8 5	8 5	— 0 1 6	— 0 0	0 7	2 4	8 5		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): 1
POWER LEVEL (10): 1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

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)	10CFR21
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
A. M. Paglia, Manager, Nuclear Licensing	AREA CODE 8 0 3 — 7 5 8 - 3 9 6 1

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	
B	J B	F C V	A 3 9 1	Y							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On March 18, 1985, the Licensee reported in LER 85-001 (as revised on May 21, 1985) that Feedwater Isolation Valve XVG-1611A did not function as designed when the reactor was shut down. After closure, the valve cycled open approximately one half inch. This valve is an 18", 900#, pneumatic-hydraulic actuated, double disc gate valve supplied by Anchor Darling Valve Company. On July 17, 1985, it was determined that a potential substantial safety hazard may have existed.

The valve was originally received with an orifice in one of the hydraulic passages in the "standby" hydraulic manifold. This orifice was designed to relieve preasure due to thermal expansion of the hydraulic fluid. An evaluation of the valve operator determined the orifice was not required and it was replaced by a plug. It was later determined that an orifice was also installed, inadvertently by the manufacturer, in the "active" manifold of the valve. With the orifice installed the valve could be forced open by system pressure.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Virgil C. Summer Nuclear Station	0 5 0 0 0 3 9 5	8 5	— 0 1 6	— 0 0	0 2 OF 0 2

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

On March 18, 1985 the Licensee reported in LER 85-001 (as revised on May 21, 1985) that an Anchor Darling Company supplied Feedwater Isolation Valve (FWIV) did not function as designed when the Reactor was shut down. After closure, FWIV XVG-1611A cycled open approximately one half inch. In the initial report the Licensee indicated the cycling was believed to be due to an internal hydraulic leak and that repairs to the valve would be made during the next outage of sufficient duration. In the interim, a non-permanent modification was installed to insure feedwater isolation by tripping the Feedwater Booster Pumps under accident (safety injection) conditions to eliminate any potential hazard until the actual cause could be determined, and the consequences evaluated.

The valve is a 18", 900#, pneumatic-hydraulic actuated, double disc gate valve. The valve was originally received with an orifice in one of the hydraulic passages in the "standby" hydraulic manifold. This orifice was designed to relieve pressure due to thermal expansion of the hydraulic fluid. The ongoing evaluation of the valve operator determined that the orifice was not required and it was replaced by a plug. During the outage, it was determined that an orifice was also installed, inadvertently by the manufacturer, in the "active" manifold of the valve. This orifice was removed and replaced by a plug.

The removal of the orifices and installation of plugs in their place has removed the leak path and resolved the problem. The temporary modification that was implemented to compensate for the valves inability to remain closed has been removed.

The defect, installation of the orifice in the "active" manifold, has been evaluated along with the consequences starting with the identification of the initial cycling problem. It has been determined that with the orifice installed the valve could be forced open by system pressure lifting the valve stem. The valve could be forced open by pressures as low as those produced by the feedwater booster pumps. The valve has been shown to close reliably but it cycles slightly thus using the available stored energy of the hydraulic accumulators. The stored energy is replenished by an air operated hydraulic pump which is unavailable in accident conditions. If the valve is forced open during a steam break condition, with a failure of a feedwater regulating valve, the feedwater booster pumps could supply feedwater to the faulted steam generator. The additional feedwater mass could cause the environmental conditions in containment to exceed their analyzed values. Based on this evaluation, it was determined that a substantial safety hazard existed in the plant as a result of the defect during the period that the cycling problem was first noticed until the non-permanent modification was installed.

Other owners of Anchor Darling pneumatic hydraulic actuated valves should evaluate the valve application, and determine if a similar safety concern exists.

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

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

July 24, 1985

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

SUBJECT: Virgil C. Summer Nuclear Station
Docket No. 50/395
Operating License No. NPF-12
LER 85-016
P-21-85-002

Dear Sir:

Attached is Licensee Event Report #85-016 for the Virgil C. Summer Nuclear Station. This LER addresses the recent failure of an Anchor Darling Valve Company supplied Feedwater Isolation Valve. This report should be considered a Final Report, and no other action will be taken by the Licensee.

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

Very truly yours,

O. W. Dixon, Jr.

HID:OSB/lcd
Attachment

cc: V. C. Summer
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