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February 19, 1996  
RC-96-0036

Document Control Desk  
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Washington, D.C. 20555

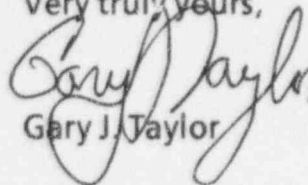
Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION  
DOCKET NO. 50/395  
OPERATING LICENSE NO. NPF-12  
LICENSEE EVENT REPORT (LER 96-001)

Attached is Licensee Event Report No. 96-001 for the Virgil C. Summer Nuclear Station. This report is submitted pursuant to the requirements of 10CFR50.73(a) (2) (ii) (C).

Should you have any questions, please call Mr. Chuck McKinney at (803) 345-4723 at your convenience.

Very truly yours,



Gary J. Taylor

CJM:ews  
Attachment

c: J. L. Skolds  
O. W. Dixon  
R. R. Mahan (w/o attachment)  
R. J. White  
S. D. Ebnetter  
S. Dembek  
NRC Resident Inspector  
J. B. Knotts Jr.  
S. R. Hunt  
S. F. Fipps  
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NSRC  
RTS (ONO 960020)  
Files (818.05 & 818.07)  
DMS

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9602260340 960219  
PDR ADOCK 05000395  
S PDR



NUCLEAR EXCELLENCE - A SUMMER TRADITION!

*Handwritten initials/signature*

EXPIRES 04/30/98

## LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Virgil C. Summer Nuclear Station

DOCKET NUMBER (2)

05000395

PAGE (3)

1 OF 4

TITLE (4)

Outside Design Basis For Appendix R Analysis

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 NAME	DOCKET NUMBER
0	1	1996	96	001	00	02	1	1996		05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more) (11)							
POWER LEVEL (10)		100	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(i)		X 50.73(a)(2)(ii)		50.73(a)(2)(x)	
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below	
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		or in NRC FORM 366A	

## LICENSEE CONTACT FOR THIS LER (12)

NAME

G. A. Lippard, Manager, Nuclear Licensing &amp; Operating Experience

TELEPHONE NUMBER (include Area Code)

(803) 345-4810

## 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
D	CC			N					

## SUPPLEMENTAL REPORT EXPECTED (14)

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

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (15)

On January 19, 1996 plant personnel discovered a condition not covered by plant operating and emergency procedures. An Appendix R analysis identified an air operated valve (AOV) control circuit as being susceptible to fire induced "hot shorts." A "hot short" in this circuit could cause a loss of component cooling water (CCW) to the "C" charging/safety injection (C/SI) pump lube oil cooler and possible failure of the C/SI pump.

"Hot shorts" can occur when conductor insulation is damaged to such an extent that adjacent conductors contact each other and power is inadvertently provided to components that should be de-energized.

Any potential adverse affect to the plant would have been restricted to an event in which a fire produced a "hot short" causing a loss of cooling water to the "C" C/SI pump while it was aligned as the only "B" train pump available. The cause of this condition was personnel error resulting from a lack of familiarity with Appendix R requirements and an inadequate guidance procedure. Administrative controls have been established to fail open the AOV supplying (CCW) to the lube oil cooler to prevent loss of lube oil cooling to the "C" C/SI pump during such conditions. The circuitry will be modified to eliminate the "hot short" potential and the guidance procedure will be updated. Actions will be completed by December 31, 1996.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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V. C. Summer Nuclear Station	05000395	9 6	--001--	0 0	2 OF 4

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

PLANT IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

EQUIPMENT IDENTIFICATION:

Component Cooling Water Valve XVG09684C-CC  
EIS System Code - CC

IDENTIFICATION OF EVENT:

The potential for a fire induced "hot short" condition was recently identified during a post modification Appendix R review of a plant modification to the cooling water supply of the charging/safety injection pump lube oil coolers. The source of cooling water for these coolers had been changed from the chilled water (VU) system to the component cooling water (CCW) system during refueling outage (RF-8) completed in December 1994.

EVENT DATE:

January 19, 1996

REPORT DATE:

February 19, 1996

This report was initiated by Off-Normal Occurrence Report 960031.

CONDITIONS PRIOR TO THE EVENT:

MODE 1 - 100% Reactor Power

DESCRIPTION OF EVENT:

On January 19, 1996, plant personnel discovered a condition not covered by plant operating and emergency procedures. A post modification Appendix R review of a modification implemented during the last refueling outage (RF-8) identified a control circuit for an air operating valve (AOV) as not meeting all design requirements for circuits susceptible to fire induced "hot shorts."

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

DESCRIPTION OF EVENT: (Continued)

As part of this modification, new piping and valves were provided from the CCW system to the C/SI pump lube oil coolers. The cooling water inlet valve to the lube oil cooler for "C"/SI pump is an AOV designed as "fail open" to ensure cooling water is available to the oil cooler on loss of electrical power. Control circuitry for this AOV (XVG09684C-CC) is routed from the Auxiliary Building (AB) through certain areas of the Control Building (CB) including areas CB-6 and CB-15. A fire affecting internal wiring of cabinets in these areas could cause a "hot short" which could result in the spurious closure of the AOV. Operating and Emergency Procedures do not provide guidance to mitigate this occurrence when the "C" C/SI pump is the operable pump on the "B" train of Engineered Safety Features (ESF) equipment.

CAUSE OF EVENT:

The cause of this event is attributed to personnel error resulting from an unfamiliarity with Appendix R requirements and an inadequate design guide. The design guide (FP-01), used in the development of this Appendix R design modification did not sufficiently address the impact of changes in system functional requirements or protection/separation of internal cabinet wiring. As a result, personnel did not recognize all of the locations where a "hot short" could occur.

ANALYSIS OF EVENT:

During a postulated fire in one of the referenced fire areas it was possible for a fire induced "hot short" condition to close AOV XVG09684C-CC and interrupt the CCW flow to the "C" C/SI pump lube oil cooler. Hot shorts can occur when conductor insulation is damaged to such an extent that adjacent conductors contact each other and power is inadvertently provided to components that should be de-energized.

Any potential adverse affect to the plant would have been restricted to an event where a fire damages the internals of either of two electrical panels so as to induct a "hot short" in the AOV control circuits with the "C" C/SI pump being aligned to the "B" train of ESF components and the "B" train pump inoperable. Additionally, the postulated event is limited to alternative shutdown scenarios where the "B" train C/SI pump is also unavailable. During the past year "B" train C/SI has been unavailable on 2 separate occasions for a total of approximately 50 hours; however, "A" train C/SI, was available during each of these time periods.

IMMEDIATE CORRECTIVE ACTIONS:

Following identification of the concern on January 19, 1996, Operations personnel administratively restricted the use of the "C" C/SI pump on the "B" ESF train. These restrictions remained in place until Fire Emergency Procedure (FEP) 1.0, "Fire Emergency Procedure Selection," was revised on January 26, 1996. The procedure revision directs temporarily securing "C" C/SI pump until the AOV supplying CCW to the oil cooler can be failed open. This procedure would be utilized in responding to a fire in those fire zones where there is a risk of fire induced "hot shorts."



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

ADDITIONAL CORRECTIVE ACTIONS:

The following additional actions have been initiated or completed:

- All appropriate Engineering personnel at V. C. Summer Nuclear Station have been made aware of this event to heighten their awareness of the potential for this type of event to occur.
- A modification will be made to eliminate the fire induced "hot short" potential for this circuitry prior to December 31, 1996.
- The Appendix R design guide FP-01 will be revised by September 30, 1996, to provide improved guidance for engineering personnel on Appendix R considerations and circuit analysis techniques. By April 15, 1996, a precautionary note will be added to the Appendix R design guide FP-01 to preclude a recurrence of this type of event.

PRIOR OCCURRENCES:

LER 94-001 dated February 11, 1994