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July 1, 2003

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

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
LICENSEE EVENT REPORT (LER 1999-014-02)
KAOWOOL FIRE BARRIERS OUTSIDE 10CFR50
APPENDIX R DESIGN BASIS

Attached is a revised Licensee Event Report, LER 1999-014-02, for the Virgil C. Summer Nuclear Station (VCSNS). This report updates the compensatory actions taken and planned in response to the testing results for KAOWOOL triple wrap fire barriers. This issue is being reported per 10 CFR 50.73(a)(2)(ii)(B).

Should you have any questions, please call Mr. Jeffrey Pease at (803) 345-4124.

Very truly yours,

Stephen A. Byrne

JWP/SAB/dr
Attachment

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File (818.07)
DMS (RC-03-0131)

IE22

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION LICENSEE EVENT REPORT (LER)	APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001 <small>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 Records Management Branch (T-8 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.</small>
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FACILITY NAME (1) Virgil C. Summer Nuclear Station	DOCKET NUMBER (2) 05000395	PAGE (3) 1 of 3
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TITLE (4)
Kaowool Fire Barriers Outside 10CFR50 Appendix R Design Basis

EVENT DATE (5)			IFR NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	29	99	1999	-- 014	-- 02	7	01	2003	FACILITY NAME	DOCKET NUMBER
										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)(vi)			X 50.73(a)(2)(iii)		50.73(a)(2)(v)
		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)		<small>Specify in Abstract below or in NRC FORM 366A</small>
20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)				

LICENSEE CONTACT FOR THIS IFR (12)

NAME R. B. Clary Manager, Nuclear Licensing	TELEPHONE NUMBER (Include Area Code) (803) 345-4757
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	KP	CBL5	BO15	YES					

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 15 single-spaced typewritten lines) (16)

On December 28, 1999, Virgil C. Summer Nuclear Station (VCSNS) commissioned testing on Kaowool triple wrap fire barriers. The testing was conducted to confirm the fire resistance rating of typical plant specific design considerations.

On December 29, 1999, engineering personnel determined, from a review of preliminary test data, that some as installed applications may not meet the current regulatory requirements for maintaining one train free of fire damage for one hour. Station Condition Evaluation Report (CER) 99-1520 was generated to document this event and to track actions for resolution.

As a result of this test, all surface mounted configurations, and 4" and larger conduit and 6" x 36" raceways suspended in open air, passed the 1-hour fire rating. Some of the cables in 1" conduit, 6" x 6" raceways, and air drop cables suspended in open air failed the Generic Letter (GL) 86-10, Supplement 1 megger when subjected to an ASTM E-119 fire test.

VCSNS has implemented compensatory actions (fire watches) as a conservative measure, for all Kaowool Fire Barriers that are needed to achieve and maintain post-fire safe shutdown in accordance with Appendix R and 10CFR50.48. Adjustments to these compensatory actions will be based on the results of further engineering evaluation, and the completion of plant modifications.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
V. C. Summer Nuclear Station	05000395	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 3
		1999	014	02	

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

PLANT IDENTIFICATION

Westinghouse - Pressurized Water Reactor

EQUIPMENT IDENTIFICATION

Kaowool Fire Barrier for Electrical Cables

IDENTIFICATION OF EVENT

Testing of Kaowool triple wrap fire barriers demonstrates that some applications do not meet design requirements.

EVENT DATE

December 29, 1999

REPORT DATE

January 26, 2000

SUPPLEMENT 1 REPORT DATE

April 1, 2000

REVISION 2 REPORT DATE

July 1, 2003

CONDITIONS PRIOR TO EVENT

Mode 1, 100% power

DESCRIPTION OF EVENT

Virgil C. Summer Nuclear Station (VCSNS) commissioned fire-endurance testing to be performed on Kaowool triple wrap fire barriers on December 28, 1999. A large scale 1-hour test was conducted at the Omega Test Labs in San Antonio, Texas. The testing was conducted on representative sample conduits and cable trays, in typical VCSNS configurations, to confirm the fire resistance rating of these barriers and verify our existing design and licensing basis. This testing was being performed as a voluntary initiative at the request of the NRC as discussed in SECY 99-204, "Kaowool and FP-60 Fire Barriers."

Engineering personnel determined, on December 29, 1999, that preliminary results indicate that some applications may not meet the current regulatory requirements for maintaining one train free of fire damage for a one hour duration (10 CFR 50 Appendix R, Section III.G.2.)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
V. C. Summer Nuclear Station	05000395	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 of 3
		1999	014	02	

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ANALYSIS

Some limited cable failures were identified. The limited failures were experienced in small cable, conduit, and tray applications installed in open-air configurations (not running along wall or ceiling). Other applications; large conduit, tray, and surface mounted conduit performed satisfactorily, based on a preliminary review of the test data.

VCSNS has a total of 30 Kaowool triple wrap applications that are required for Appendix R. The 30 Kaowool applications are limited to 18 separate fire areas/zones. Of the 18 fire areas, 14 have fire loads less than the current designed fire rating of the enclosure with the other four located in cable chases that have automatic fire suppression. Additionally, 16 of the affected fire areas, have acceptable core damage frequency, as calculated during Phase 1 of the IPEEE evaluation, with the remaining 2 found acceptable during Phase 2 by fire modeling. In four instances the air drop cables required an additional (2) layers of 1" Kaowool wrap and modifications (ECR-50205) to provide thermal masses above the tested configurations to protect these individual cables.

IMMEDIATE ACTIONS

VCSNS has implemented compensatory actions (roving fire watches) for all 30 Appendix R Kaowool triple wrap applications (18 fire areas/zones) as a conservative and precautionary measure.

LONG TERM CORRECTIVE ACTIONS

VC Summer has implemented modifications (ECR 50205), based on the results of the engineering evaluations to address affected areas by providing additional protection for exposed silicone foam barriers, exposed supports (potential thermal shorts), and the air drop cables. This change included evaluations resulting in 11 of the 30 Kaowool triple wrap applications meeting all design and licensing basis.

VC Summer is also pursuing additional modifications to address the remaining 19 Kaowool applications, which include re-routing cables, adding suppression, and using a qualified fire wrap material. These changes are intended to bring VCSNS into compliance with existing design and licensing bases. These modifications are scheduled to be completed by December 31, 2005.