



March 29, 2000
RC-00-0210

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

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
LICENSEE EVENT REPORT (LER 1999-014-01)
KAOWOOL FIRE BARRIERS OUTSIDE 10CFR50 APPENDIX R
DESIGN BASIS, SUPPLEMENT 1

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Attached is a supplement to Licensee Event Report No. 1999-014-01, for the Virgil C. Summer Nuclear Station (VCSNS). This report describes testing performed on 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 Mrs. April Rice at (803) 345-4232.

Very truly yours,

BC Williams for
Stephen A. Byrne

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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-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. 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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Virgil C. Summer Nuclear Station	DOCKET NUMBER (2) 0 5 0 0 0 3 9 5	PAGE (3) 1 of 3
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TITLE (4)
Kaowool Fire Barriers Outside 10CFR50 Appendix R Design Basis

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
12	29	99	1999	-- 014	-- 01	04	01	2000		05000
									FACILITY NAME	DOCKET NUMBER

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 or in NRC FORM 366A	
20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)					

LICENSEE CONTACT FOR THIS LER (12)	
NAME A. R. Rice Manager, Nuclear Licensing & Operating Experience	TELEPHONE NUMBER (Include Area Code) (8 0 3) 3 4 5 - 4 2 3 2

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. In four instances, there are potential air drop cables that require additional analysis and modifications to protect these individual cables.

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 of 10CFR50.48. Adjustments to these compensatory actions will be based on the results of further engineering evaluation, completion of plant modifications, or NRC granting of deviation requests.

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	01	

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 REPORT DATE

April 1, 2000

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.)

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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	01	

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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 there are potential air drop cables that required additional analysis and potentially modifications 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

Additional actions will be taken based on the results of the engineering evaluation with consideration of NRC staff recommendations to address affected areas as noted in SECY-99-204.

VC Summer is developing an engineering change request (modification) that will provide additional protection for exposed silicone foam barriers, exposed supports (potential thermal shorts), and the potential air drop cables. Flamemastic will be added in some areas for physical protection.

Where adequate protection can be provided to ensure safe shutdown capability by the Kaowool triple wrap fire barriers, separate deviations of 45 minutes will be requested to the requirements of Section III.G.2.c of Appendix R to 10CFR50.

VCSNS will continue to work with the NRC to resolve concerns relative to Kaowool fire barrier qualification.