Stephen A. Byrne Senior Vice President, Nuclear Operations 803.345.4622



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,

Sto Q. Bal

Stephen A. Byrne

JWP/SAB/dr Attachment

c: N. O. Lorick
N. S. Carns
T. G. Eppink (w/o attachment)
R. J. White
L. A. Reyes
K. R. Cotton
NRC Resident Inspector
K. M. Sutton
D. L. Abstance

P. Ledbetter EPIX Coordinator INPO Records Center J&H Marsh & McLennan QC NSRC RTS (0-C-99-1520) File (818.07) DMS (RC-03-0131)

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IRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION 1998) ICENSEE EVENT REPORT (LER)				APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001 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 Perturbative Rest (2160.0104)										
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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.

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Westinghouse - Pressurized Water React	or								
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.									
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December 29, 1999									
REPORT DATE									
January 26, 2000									
SUPPLEMENT 1 REPORT DATE									
April 1, 2000					ſ				
REVISION 2 REPORT DATE									
July 1, 2003									
CONDITIONS PRIOR TO EVENT									
Mode 1, 100% power									
DESCRIPTION OF EVENT									
Virgil C. Summer Nuclear Station (VCS) triple wrap fire barriers on December 28, in San Antonio, Texas. The testing was VCSNS configurations, to confirm the fi	NS) commissioned fire 1999. A large scale 1- conducted on represen re resistance rating of t	-endurance hour test wa tative sampl hese barrier	testing to be p as conducted a le conduits and s and verify or	erformed on t the Omega i cable trays, r existing de	Kaowool Test Labs , in typical esign and				

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

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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<u>ANALYSIS</u>

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.