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January 30, 1997  
RC-97-0027

Document Control Desk  
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Washington, DC 20555

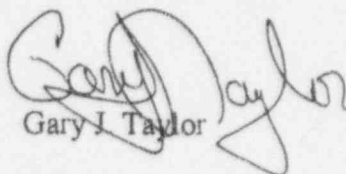
Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)  
DOCKET NO. 50/395  
OPERATING LICENSE NO. NPF-12  
LER 96-007, REVISION 2

Attached is Licensee Event Report No. 96-007, Revision 2, for the Virgil C. Summer Nuclear Station. This report is submitted pursuant to the requirements of 10CFR Part 21 and provides SCE&G's closure of this issue.

Should you have questions, please call Mr. Jim Turkett at (803) 345-4047.

Very truly yours,



Gary J. Taylor

JWT/GJT/nkk  
Attachment

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Files (818.07, 818.18)  
DMS (RC-97-0027)

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PDR ADOCK 05000395  
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## 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 5

TITLE (4)

ITT Barton Model 763 Pressure Transmitter Strain Gage Failures

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
07	30	96	96	-- 07	-- 02	01	31	97		05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
1			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)	
75			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)		<input checked="" type="checkbox"/> 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)(vi)			

## LICENSEE CONTACT FOR THIS LER (12)

NAME

April R. Rice  
Manager, Nuclear Licensing & Operating Experience

TELEPHONE NUMBER (Include Area Code)

(803) 345-4232

## 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	AB		B080	Y					

## 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) (16)

This report is being made pursuant to 10 CFR Part 21.

On June 5, 1996, engineering review of plant incident reports identified the third failure of ITT Barton Model 763 pressure transmitters at V. C. Summer Nuclear Station within a one week period. In each case, a strain gage lead was broken at its terminal pin.

Model 763 transmitters are used at V. C. Summer Nuclear Station to provide protection signals based on pressurizer pressure; specifically, reactor trip on high pressurizer pressure or reactor trip and safety injection on low pressurizer pressure. The transmitters exhibiting the described defect were all from existing VCSNS stock as they were received in the same shipment. Each transmitter was calibrated, and installed as IPT00457-RC where two failed after being in service for a short period of time, and one failed prior to return to service. A Model 763 pressure transmitter, of a different purchase, was calibrated and installed as IPT00457-RC. V. C. Summer Nuclear Station ensured that the associated application was restored to operable status. Reliability of pressurizer pressure transmitters is verified by weekly monitoring and channel checks.

ITT Barton has not established a root cause for what appears to be an isolated, but repetitive, failure of the Model 763 pressure transmitters. Barton issued a Part 21 notification on this issue and has assumed responsibility for resolution.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

PLANT IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

EQUIPMENT IDENTIFICATION:

Pressure transmitters used in the protection scheme circuits for Pressurizer High Pressure Reactor Trip or Pressurizer Low Pressure Reactor Trip and Safety Injection.

EIIS Code AB

IDENTIFICATION OF EVENT:

Potential failure of protection circuitry for Reactor Trip and Safety Injection.

DISCOVERY DATE:

July 30, 1996 - Virgil C. Summer Nuclear Station, upon review of failures which occurred through June 5, 1996, determined that the failure mechanism presented a substantial safety hazard and should be reported in accordance with 10CFR Part 21.

REPORT DATE:

January 31, 1997

This report was generated by Non-Conformance Notice 5481.

CONDITIONS PRIOR TO THE EVENT

MODE 1 75% Reactor Power

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

EXPIRES 5/31/95

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DESCRIPTION OF EVENT

On July 30, 1996, Virgil C. Summer Nuclear Station determined that a substantial safety hazard, reportable pursuant to 10 CFR Part 21, existed relative to the potential failure of transmitters used for pressure protection in the Engineered Safeguards and Reactor Trip circuitry. The devices are ITT Barton Model 763 pressure transmitters.

The Model 763 transmitters are used for providing High Pressurizer Pressure Reactor Trip, Low Pressurizer Pressure Reactor Trip and Low Pressurizer Pressure Safety Injection.

On June 5, 1996, a Model 763 pressure transmitter was installed at the IPT00457-RC location and failed high prior to being placed in service. Non-Comformance Notice 5481 was generated for evaluation of the failure. Engineering review of plant incident reports identified this as the third failure of a transmitter installed at this location within a one week period. The two previous failures of Model 763 pressure transmitters at this location failed after being in service for a short period of time (2-5 days). Each of the transmitters installed at the IPT00457-RC location were obtained by the same purchase order and received at VCSNS in the same shipment.

CAUSE OF EVENT:

In each case, a strain gage lead was broken loose at its terminal pin. This condition appears to be an inherent defect in manufacturing/repair based on ITT Barton Failure Analysis Report FA 960701 and the number of similar failures occurring in a short period of time.

ANALYSIS OF EVENT:

The defect could cause a loss of safety function to the extent that there is a major reduction in the degree of protection provided to the public health and safety. The pressurizer pressure transmitters (IPT00455(6)(7)-RC) provide the following protection signals:

1. Reactor Trip on high pressurizer pressure.
2. Reactor Trip on low pressurizer pressure.
3. Safety Injection on low pressurizer pressure.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

ANALYSIS OF EVENT: (continued)

The VCSNS PSAR takes credit for the low pressurizer pressure protection signals to mitigate the consequences of a Large Break LOCA. A transmitter installed at IPT 00455(6)(7)-RC which fails high would not provide the low pressure protection signal. The protection circuitry is based on 2 out of 3 input logic, so the failure of one transmitter would not, in and of itself, prevent the proper protection function. However, this failure condition coincident with an additional transmitter failure would affect the automatic activation of safety injection should a large break LOCA occur. This could result in potential offsite exposure exceeding 10 CFR 100.11 limits.

V. C. Summer Engineering personnel have discussed this situation with ITT Barton. The failed transmitters were shipped and received together. The preliminary consensus is, that a manufacturing process error potentially contributed to the defect and this condition is an isolated occurrence limited to the lot of transmitters from which those shipped to VCSNS was supplied.

V. C. Summer Engineering personnel also performed a review of ITT Barton 760 model series transmitter failures using the NPRDS data base. NPRDS indicated that most failures were either age related or unknown. There were no strain gage failures identified; thus this review was inconclusive as to industry experience with the problems noted for V. C. Summer.

On December 13, 1996, ITT Barton issued a supplementary Part 21 notification. In this notification Barton committed to supplying the NRC periodic updates and to notify impacted customers consistent with the requirements of 10CFR21.

Other licensees with ITT Barton Model 763 pressure transmitters should review the history for their particular applications and determine if broken/loose strain gages have attributed to any failures which may have occurred at their plants.

IMMEDIATE CORRECTIVE ACTIONS:

A Model 763 pressure transmitter, independent of existing VCSNS warehouse stock, was procured and installed at the IPT00457-RC location.

V. C. Summer Station ensured that the associated applications were restored to operable status upon identification, replacement and testing of the respective Model 763 pressure transmitters. As the Model 763 currently installed is from an unrelated stock and is performing satisfactorily, continued operation does not present an adverse impact on safety.



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ADDITIONAL CORRECTIVE ACTIONS:

As noted in Revision 1 to this LER, SCE&G expected to receive failure analysis results from ITT Barton by January 31, 1997. As of this date, ITT Barton has not completed its review of the issue, however, on December 13, 1996, ITT Barton issued a supplementary Part 21 notification. In this notification Barton committed to supplying the NRC periodic updates and to notify impacted customers consistent with the requirements of 10CFR21.

ITT Barton has requested that SCE&G return the two remaining unused Model 763 transmitters received in the same purchase lot as the failed units for analytical testing. Barton also intends to review their records to identify units manufactured at the same time as the units shipped to VCSNS, compare type of failure and/or repair performed on these sister units, if any, in an effort to isolate the failures noted by this LER to the units shipped to VCSNS. Through these two parallel efforts, Barton expects to ascertain the cause of failure and determine the process enhancements to preclude recurrence of this type failure in future units of this model.

No units of Model 763 transmitters from the original shipment in question are available at VCSNS for installation in the plant. The results of ITT Barton's planned actions should benefit manufacturing processes for subsequent generations of this model. Also, should any recommended actions for Model 763 units currently in service be provided by ITT Barton, VCSNS will take appropriate action to address or implement, as applicable. SCE&G plans no further actions for this issue.

PRIOR OCCURRENCES:

None