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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Virgil C. Summer Nuclear Station	DOCKET NUMBER (2) 05000395	PAGE (3) 1 of 4
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TITLE (4)
10 CFR 21 on K-Line Breaker

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
08	06	1999	1999	-- 011	-- 00	10	21	1999		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)	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)	X OTHER 21.21(a)(1)						
	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) (803) 345-4232

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	EA	BKR	ABB	Y					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	NO X				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On August 6, 1999, during performance of a Surveillance Test Procedure on an ABB K-Line breaker removed from cubical XSW1DB1 07D, the breaker failed to trip on the long time delay setting. Non-Conformance Notice (NCN) 99-1129 was written to document the failure and disposition the failed breaker. Upon investigation and through discussions with the ABB Service Inc., Charlotte Service Center, 100820 H Independence Pointe Pkwy, Matthews, North Carolina, 28105, it was determined that the shunt trip wires were interfering with the trip shaft paddle of the breaker. This condition can prevent the breaker from either tripping or closing.

The cause was determined to be inappropriate routing and/or insufficient support of breaker wiring during initial manufacture and overhaul.

VCSNS utilizes these breakers in many applications, including the 480VAC, Safety-Related electrical buses. The shunt trip wiring problem is considered a defect in a basic component supplied to a facility. This condition represents a potential for a common mode failure for safety-related K-Line breakers.

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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

EIIS Code: EA

IDENTIFICATION OF EVENT

This report is based on the initiation of Non-Conformance Notice (NCN) 99-1129 and Significant Safety Hazard (SSH) 990002.

EVENT DATE

August 6, 1999

REPORT DATE(s)

September 22, 1999 - Date of Significant Safety Hazard report.
October 21, 1999 - Date of Part 21 Notification to the NRC.

CONDITIONS PRIOR TO EVENT

Mode 1 – Normal Operations (100%)

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DESCRIPTION OF EVENT

During performance of Surveillance Test Procedure 508.002 on the K-Line breaker removed from cubicle XSW1DB1 07D, the breaker (serial number 51452A -16 - 07855) failed to trip on the long time delay setting. This breaker had been in service supplying the 'B' Reactor Make-up Water Pump for approximately 18 months.

The VCSNS electricians performing the testing noted that the shunt trip wires were routed in such a manner as to cause interference with the trip shaft paddle.

Further breaker inspections identified a second breaker with wire routing which could have resulted in the breaker being in a trip free condition.

CAUSE OF EVENT

After inspection of two potentially impacted breakers on site, ABB and VCSNS personnel agreed that the cause of the failure to trip was inappropriate routing of the wire bundle and/or insufficient cable support to preclude interference with the tripper shaft. The shunt trip coil wire was insufficiently supported and in a position that allowed it to cause the failure to trip.

ANALYSIS OF EVENT

During inspections conducted with VCSNS personnel and ABB personnel on these breakers, it has been determined that the identified wiring problem could exist in a manner which could impact the breakers in either of the following ways:

For breakers which have the shunt trip coil wiring underneath the tripper paddle - the overload trip could be prevented from operating.

For breakers which have the shunt trip coil wiring on top of the tripper paddle - a trip free condition could result.

This condition could exist in any ABB breaker with the following model numbers provided new from the factory:

K-225 through K-800
K-2000

K-1600
K-2000S

K-1600S

NOTE: This potential condition could exist on all electrically operated circuit breakers and/or any mechanically operated circuit breakers which have auxiliary switches or a shunt trip.

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INTERIM CORRECTIVE ACTIONS

1. Upon discovery of this condition, an inspection plan was developed and implemented for all potentially affected breakers at VCSNS. VCSNS has inspected 26 of 30 identified safety related breakers. Of the 26 inspected, the originally identified breaker and one other breaker (serial number 51452A -16 - 08855), installed in XSW 1DA1 06C (supplying one of four Reactor Building Cooling Unit fans), required additional support for the shunt trip coil wiring.
2. VCSNS has also identified eight non-safety related breakers of which three have been inspected with no problems identified.
3. ABB has modified their breaker refurbishment procedure .

ADDITIONAL CORRECTIVE ACTIONS

1. The remaining four Safety-Related breakers are normal incoming breakers to 480 VAC buses which are not cycled with the plant on-line. These breakers are presently closed. Therefore, the breakers will not have the opportunity to get into a trip free condition. Also, a fault to challenge the incoming breaker would have to be within the switchgear because all load breakers have either been inspected or are not susceptible to this condition. The probability of internal switchgear faults is very low. Combining this with the low probability that the particular breaker has wiring interference and the personnel risk of on-line inspection, justifies continued operation until these breakers can be inspected during Refueling Outage 12. Therefore, these breakers, along with the five remaining Non-Safety-Related breakers, have been added to the scope of Refueling Outage 12.
2. ABB Service has issued an internal bulletin to inform all ABB refurbishment service centers of this issue and the procedure change which they have written.
3. ABB T&D has agreed to revise the procedure for new breaker assembly by December 31, 1999.

PRIOR OCCURRENCES

None