

FEB 02 1990

MEMORANDUM FOR: Charles E. Rossi, Director
 Division of Operational Events Assessment
 Office of Nuclear Reactor Regulation

FROM: Thomas M. Novak, Director
 Division of Safety Programs
 Office for Analysis and Evaluation
 of Operational Data

SUBJECT: DESIGN DEFICIENCY OF WESTINGHOUSE SAFETY
 INJECTION BLOCK SWITCH

On April 18, 1989, we issued the enclosed Technical Review Report, AEOD/T904, on a design deficiency of the Safety Injection (SI) block switch used at Point Beach Nuclear Plant, Unit 1. The existing scheme uses a single "block/unblock" manual selector switch for both SI trains. A licensee analysis indicates that a single failure of this switch can block low pressurizer pressure or low steam-line pressure SI signal in both trains.

On August 19, 1988, the Wisconsin Electric Power Company, the owner of the Point Beach Nuclear Plant, issued LER 88-007 detailing the deficiency they had found in the existing scheme. They have resolved the issue by installing two selector switches, one for each train.

At our initiation, Westinghouse, the NSSS vendor, has investigated the generic aspects of this single failure issue. Westinghouse has identified three other plants - Ginna, Turkey Point Units 3 & 4, and Robinson Unit 2 which use similar block switches. Westinghouse has informed the licensees of these three plants of the problem and its proposed resolution (see enclosed copy of Westinghouse letters on this issue). This completes our study on this issue.

Thomas M. Novak, Director
 Division of Safety Programs
 Office for Analysis and Evaluation
 of Operational Data

Enclosures:
 As stated

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memo





Westinghouse
Electric Corporation

Energy Systems

RGE-89-647

Nuclear and Advanced
Technology Division

Box 355
Pittsburgh Pennsylvania 15230-0355

October 12, 1989
NS-OPLS-OPL-I-89-517

Mr. R. Eliasz
Rochester Gas and Electric Corp.
49 East Avenue
Rochester, NY 14649

ROCHESTER GAS & ELECTRIC CORPORATION
RE GINNA STATION
Control Room Safety Injection Block Switches

Dear Mr. Eliasz:

The purpose of this letter is to provide confirmation and formal notification to you as follow-up to our telephone conversation of August 17, 1989. The issue involves the use of a single switch to control the block/unblock function for both trains of safety injection.

BACKGROUND

During a control room design review at the Point Beach Nuclear Plant, the use of a single manual SI block/unblock switch for both SI trains was questioned. A subsequent review led to the conclusion that a single failure of the switch (Westinghouse OT2) could block either the automatic low pressurizer pressure or the low steamline pressure SI signal in both trains. Point Beach prepared LER 88-007 (attached) on 9/16/88 describing in detail their review and conclusion. Westinghouse was contacted by the NRC informing us of the issue and requesting our review.

DISCUSSION

Westinghouse has reviewed both the LER and the postulated switch failure mechanism and agrees that a single failure could cause the blocking of both SI trains. Four contact blocks are stacked in series and operated by a single switch mechanism. If the upper contact block internals stick it would cause both contacts to remain in the block position. More recent Westinghouse designs have provided one switch per train and Point Beach is planning to do the same.



SAFETY IMPACT

If automatic initiation of SI is blocked by a failed switch, an annunciator will alert the operator so that SI may be initiated manually. The operator should also observe a failed switch during a normal cooldown for the same reason.

For most events, pressurizer pressure and steamline pressure SI are also backed up by SI initiation on containment pressure. These coupled with the low probability of failure of a control board switch (10^{-3} - 10^{-5} /yr.) provide sufficient justification for continued operation until a convenient time to add a separate switch.

RECOMMENDATIONS

Our records (Dwg. #110E059 Sheet 3 Rev. 10) indicate that the above mentioned block functions were implemented with a single switch at Ginna. Although not an immediate safety concern, Westinghouse recommends that design changes be developed to provide separate block switches for each train.

If you have any questions or comments, please contact the undersigned.

Very truly yours,
WESTINGHOUSE ELECTRIC CORPORATION

Stephen P. Swigart

S. P. Swigart, Project Manager
New York Area
Customer Projects Department

S. DiTommaso
S. DiTommaso/
Attachment

cc: G. Wrobel, HQ 1L, 1A
D. Lewis, EUFS 1L, 1A
G. Link, HQ 1L, 1A



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Westinghouse
Electric Corporation

Energy Systems



Nuclear and Advanced
Technology Division

Box 355
Pittsburgh Pennsylvania 15230-0355

October 26, 1989
FPL-89-884
NS-OPLS-OPL-II-89-779

Mr. D. A. Chaney, Director
Nuclear Licensing Department
Florida Power & Light Company
P. O. Box 14000
700 Universe Blvd
Juno Beach, Florida 33408

Attention: Mr. P. L. Pace

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNITS 3 & 4
Control Room Safety Injection Block Switches

Dear Mr. Hale:

The purpose of this letter is to provide confirmation and formal notification to you as follow-up to our telephone conversation of August 17, 1989. The issue involves the use of a single switch to control the block/unblock function for both trains of safety injection.

BACKGROUND

During a control room design review at the Point Beach Nuclear Plant, the use of a single manual SI block/unblock switch for both SI trains was questioned. A subsequent review led to the conclusion that a single failure of the switch (W OT2) could block either the automatic low pressurizer pressure or the low steamline pressure SI signal in both trains. Point Beach prepared LER 88-007 (attached) on 9/16/88 describing in detail their review and conclusion. W was contacted by the NRC informing us of the issue and requesting our review.

DISCUSSION

W has reviewed both the LER and the postulated switch failure mechanism and agrees that a single failure could cause the blocking of both SI trains. Four contact blocks are stacked in series and operated by a single switch mechanism. If the upper contact block internals stick it would cause both contacts to remain in the block position. More recent W designs have provided one switch per train and Point Beach is planning to do the same.



FPL-89-884
NS-OPLS-OPL-II-89-779
Page 2

SAFETY IMPACT

If automatic initiation of SI is blocked by a failed switch, an annunciator will alert the operator so that SI may be initiated manually. The operator should also observe a failed switch during a normal cooldown for the same reason.

For most events, pressurizer pressure and steamline pressure SI are also backed up by SI initiation on containment pressure. These coupled with the low probability of failure of a control board switch (10^{-3} to 10^{-5} /yr.) provide sufficient justification for continued operation until a convenient time to add a separate switch.

RECOMMENDATIONS

Our records (Dwg. #110E188, sh 5, Rev. 10) indicate that the above mentioned block functions were implemented with a single switch on your plant. Although not an immediate safety concern, Westinghouse recommends that design changes be developed to provide separate block switches for each train.

If you have any questions, please contact the undersigned.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION

J. R. Gallick for

D. J. Richards, Manager
Florida Power & Light Project



Westinghouse
Electric Corporation

Energy Systems

Box 355
Pittsburgh Pennsylvania 15230-0355

CPL-89-633

October 13, 1989
NS-OPLS-OPL-II-89-751

Mr. R. E. Morgan
General Manager
H. B. Robinson SEG Plant
Carolina Power & Light Company
P. O. Box 790
Hartsville, NC 29550

CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON UNIT 2
CONTROL ROOM SAFETY INJECTION BLOCK SWITCHES

Dear Mr. Morgan:

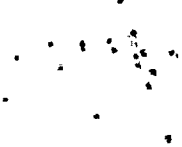
The purpose of this letter is to provide confirmation and formal notification to you as follow-up to our telephone conversation of August 17, 1989. The issue involves the use of a single switch to control the block/unblock function for both trains of safety injection.

BACKGROUND

During a control room design review at the Point Beach Nuclear Plant, the use of a single manual SI block/unblock switch for both SI trains was questioned. A subsequent review led to the conclusion that a single failure of the switch (Westinghouse OT2) could block either the automatic low pressurizer pressure or the low steamline pressure SI signal in both trains. Point Beach prepared LER 88-007 (attached) on 9/16/88 describing in detail their review and conclusion. Westinghouse was contacted by the NRC informing us of the issue and requesting our review.

DISCUSSION

Westinghouse has reviewed both the LER and the postulated switch failure mechanism and agrees that a single failure could cause the blocking of both SI trains. Four contact blocks are stacked in series and operated by a single switch mechanism. If the upper contact block internals stick it would cause both contacts to remain in the block position. More recent Westinghouse designs have provided one switch per train and Point Beach is planning to do the same.



SAFETY IMPACT

If automatic initiation of SI is blocked by a failed switch, an annunciator will alert the operator so that SI may be initiated manually. The operator should also observe a failed switch during a normal cooldown for the same reason.

For most events, pressurizer pressure and steamline pressure SI are also backed up by SI initiation on containment pressure. These coupled with the low probability of failure of a control board switch (10^{-3} - 10^{-5} /yr.) provide sufficient justification for continued operation until a convenient time to add a separate switch.

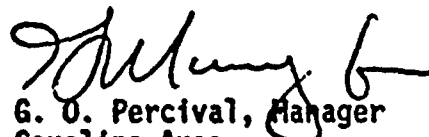
RECOMMENDATIONS

Our records (Dwg. #110E198 Sheet 6 Rev. 12) indicate that the above mentioned block functions were implemented with a single switch at H. B. Robinson. Although not an immediate safety concern, Westinghouse recommends that design changes be developed to provide separate block switches for each train.

If you have any questions or comments, please contact the undersigned.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION



G. O. Percival, Manager
Carolina Area
Customer Projects Department

/jas

- cc: R. E. Morgan (CP&L - HBR) 1L
- C. R. Dietz (CP&L - HBR) 1L
- J. M. Curley (CP&L - HBR) 1L
- D. M. Boatwright (CP&L - HBR) 1L
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