

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Point Beach Nuclear Plant	DOCKET NUMBER (2) 0 5 0 0 0 2 6 6	PAGE (3) 1 OF 0 5
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TITLE (4)
Single failure potential in 4160 volt safeguards switchgear

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 NAMES		DOCKET NUMBER(S)
0 1	1 0	8 8	8 8	0 0 1	0 0	0 2	0 8	8 8	None		0 5 0 0 0
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THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (9) NA	20.402(b)	20.408(a)	80.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 110 0	20.408(a)(1)(i)	80.36(a)(1)	80.73(a)(2)(v)	73.71(a)
	20.408(a)(1)(ii)	80.36(a)(2)	XX 80.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)
	20.408(a)(1)(iii)	80.73(a)(2)(i)	80.73(a)(2)(viii)(A)	
	20.408(a)(1)(iv)	80.73(a)(2)(ii)	80.73(a)(2)(viii)(B)	
	20.408(a)(1)(v)	80.73(a)(2)(iii)	80.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
C. W. Fay, Vice President Nuclear Power	AREA CODE: 4 1 4 2 2 1 - 2 8 1 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
B	E B	S W G R	W 1 2 0	No					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

In response to IE Information Notice 87-61, "Failure of Westinghouse W-2 Type Circuit Breaker Cell Switches," Point Beach Nuclear Plant personnel discovered a potential "single failure" design error in the use of a cell switch in the 4160 volt safeguards bus tie breakers. Failure of this cell switch would prevent both emergency diesel generators from automatically supplying power to both trains of safeguards equipment in the event of a loss of offsite AC. The cell switches were verified to be in their required position and administratively controlled there until a temporary modification could be installed to bypass the cell switch such that failure of the switch will not prevent the diesel generators from automatically supplying power to safeguards equipment. Administrative control of the tie breakers position was also required as a result of the temporary modification. A permanent modification which will eliminate the single failure problem associated with the tie breaker cell switch is being designed.

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TEXT (If more space is required, use additional NRC Form 365A 9) (17)

EVENT DESCRIPTION

In response to IE Information Notice 87-61, "Failure of Westinghouse W-2 Type Circuit Breaker Cell Switches," Point Beach Nuclear Plant personnel investigated the application of cell switches at PBNP. As a result of this work, it was determined that a single failure of a Type "W" switch on the bus tie breakers between 4160 volt safeguards busses 1-A05 and 1-A06 or 2-A05 and 2-A06, in Units 1 and 2 respectively, would prevent the automatic closure of the supply breakers to these busses from the associated emergency diesel generators.

SYSTEM DESCRIPTION

A diagram of the busses and breakers involved is attached. The following is a system description and discussion of the design deficiency for the Unit 1 breaker arrangement. It is equally applicable for Unit 2.

Tie breaker 61 provides a means to tie together safeguards busses 1-A05 and 1-A06. These busses supply the 4160 volt power to Train A and Train B safeguards loads. The tie breaker is provided for use during a unit shutdown to facilitate maintenance on the normal bus supply breakers, 57 or 63. A cell switch associated with tie breaker 61 provides an interlock in the automatic closing circuits for both breakers 60 and 66, preventing automatic closure of those breakers when breaker 61 is closed. The purpose of this interlock is to prevent the automatic paralleling of both emergency diesel generators following a fast start without synchronization.

It is postulated that a single failure in this cell switch could, in the event of a loss of offsite power, prevent the automatic closure of breakers 60 and 66 and thereby temporarily disable emergency power to both trains of 4160 volt safeguards equipment. This cell switch failure would not, however, prevent the 60 and 66 supply breakers from being closed manually by the control room operator from the unit's control board. The Point Beach Emergency Operating Procedures direct the operators to manually energize the 1-A05 and 1-A06 busses should automatic breaker closure not occur.

The cell switch contacts indicate the actual position of the tie breaker in the diesel generator output breaker closing logic. This logic allows the diesel output breaker to close if the tie breaker is open and prevents it from closing if the tie breaker is closed.

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

The cell switch contacts in the tie breaker can change position only during an actual change in breaker position. If the breaker position is not changed, the contact position cannot change. Therefore, the postulated single failure can occur only after the position of the tie breaker has been changed.

These tie breakers are not normally operated. The operability of the automatic closing circuit for the emergency diesel generator supply breakers (60 and 61) is demonstrated during the performance of ORT-2, "Safety Injection Actuation with Loss of Energized Safeguards AC," during each refueling outage. This test was successfully completed on both units during their last refueling outages.

At the time of discovery of this design deficiency both units were at 100% power.

GENERIC IMPLICATIONS

The original plant design included the design error discovered during the evaluation of IEN 87-61. A thorough investigation was made to determine if other interlocks that might present a similar problem were included in the original plant design. No other problems were identified.

REPORTABILITY

This Licensee Event Report is provided pursuant to 10 CFR 50.72(a)(2)(vii), "Any event where a single cause or condition caused...two independent trains or channels to become inoperable in a single system designed to: (B) Remove residual heat; (D) Mitigate the consequences of an accident."

The Energy Industry Identification System component function identifier for the safeguards switch gear is SWGR. The system designation for the safeguards busses is EB.

CAUSE

The cause of this situation is a design error which occurred during the original design of the facility.

SAFETY ASSESSMENT

The safeguards bus tie logic was provided to protect the emergency diesel generators from being automatically connected in parallel without synchronization. The design of this logic was in error because a single failure could prevent both diesels from automatically supplying power to the associated safeguards bus if a

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loss of AC were to occur and the switch were to fail. For an event where the diesels fail to close onto a safeguards bus, the operators are trained on and the Emergency Operating Procedures provide steps for manually energizing any safeguards busses which are not energized.

In the event of a design basis loss of coolant accident coincident with a loss of offsite power and this single failure, we cannot assure that operator action would occur in a sufficient time to preclude consequences more severe than analyzed in the safety analysis report. As discussed above, the operators are trained and procedures are in place for the systematic restoration of power to the safeguards busses. The operators are not, however, expected to restore power to the safeguards busses in as fast a time as the automatic switchover to the diesels. Therefore, fuel damage may be incrementally more severe due to the delay in the initiation of safety injection. It should be noted that the function of these interlocks has been tested each refueling outage, and there has been no instance where the switches involved failed to perform their function. Further, once the switch has been verified to be operable, the associated breaker must be operated for the single failure to occur. Since operation of these breakers rarely occurs, it is highly unlikely that the potential single failure of the switch could have occurred.

CORRECTIVE ACTIONS

When the single failure problem was discovered, the position of the cell switch contacts was verified by electrical continuity testing and breaker position was administratively controlled to ensure the switch was not operated without subsequent continuity testing. Additionally, a temporary modification was installed on January 21, 1988, which defeats the cell switch interlock, thus preventing a single failure of the cell switch from affecting automatic closure of the diesel generator output breakers. The temporary modification may be removed only under administrative control when the tie breakers are closed during a maintenance or emergency evolution. Since these tie breakers are intended only for use during maintenance done during refueling shutdown conditions, when the normal supplies to the safeguards busses are unavailable, the administrative controls are adequate for the short term and not a hardship on the normal operations of the plant.

A permanent modification is being designed which will provide the original automatic function but does not allow a single failure of a cell switch to affect the automatic closure of the diesel generator output breaker safeguards bus supply breakers. This modification is scheduled for completion during the Unit 1 spring

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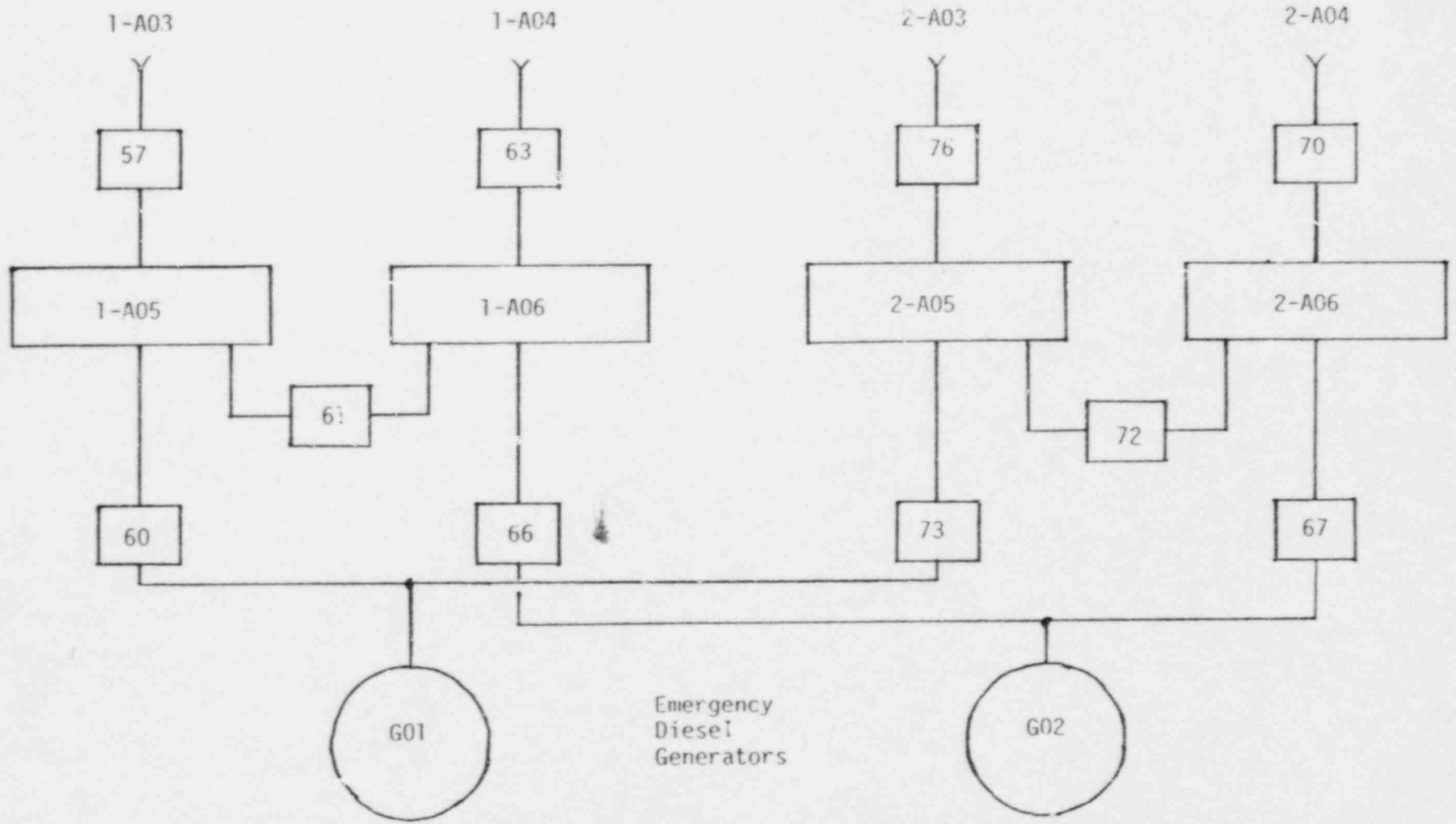
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refueling outage and the Unit 2 fall refueling outage in 1988. If the final modification is not installed as described here a supplementary LER will be filed.

SIMILAR OCCURRENCES

To our knowledge this condition has not occurred and does not exist in other locations at Point Beach Nuclear Plant in the past.

NORMAL POWER SUPPLY



SIMPLIFIED SCHEMATIC OF BUS SECTIONS
A05 AND A06 NORMAL AND EMERGENCY
POWER SUPPLIES



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February 8, 1988

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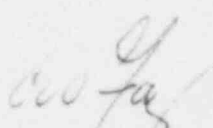
DOCKET 50-266
LICENSEE EVENT REPORT 88-001-00
SINGLE FAILURE POTENTIAL IN 4160 VOLT SAFEGUARDS SWITCHGEAR
POINT BEACH NUCLEAR PLANT UNIT 1

Enclosed is Licensee Event Report 88-001-00 for Point Beach Nuclear Plant Unit 1. This report is being provided in accordance with 10 CFR 50.73(a)(2)(vii), "Any event where a single cause or condition caused . . . two independent trains or channels to become inoperable in a single system designed to: (B) remove residual heat, or (D) mitigate the consequences of an accident."

A notice pursuant to the provisions of 10 CFR Part 21 about the design condition discussed in this LER was filed by Wisconsin Electric Power Company on January 13, 1988. In that report, we noted we may file a supplement to that report in 60 days. At this time, we do not plan on any further report.

If any further information is required, please contact us.

Very truly yours,


C. W. Fay
Vice President-Nuclear Power

Enclosure

Copies to NRC Resident Inspector
NRC Regional Administrator, Region III

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