

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY
WITH THIS 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

FACILITY NAME (1)

Point Beach Nuclear Plant, Unit 1

DOCKET NUMBER (2)

05000266

PAGE (3)

1 of 5

TITLE (4)

Service Water Pumps Auto Start Function On EDG Breaker Closure Failure

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
12	27	1998	1998	029	00	01	26	1999	PBNP Unit 2	05000301
OPERATING MODE (9)		N	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)		X	50.73(a)(2)(i)(B)		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)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)			50.73(a)(2)(v)		Specify in Abstract below
			20.2203(a)(2)(iv)		50.36(c)(2)			50.73(a)(2)(vii)		or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME

Charles Wm. Krause, Senior Regulatory Compliance Engineer

TELEPHONE NUMBER (Include Area Code)

(920) 755-6809

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES

(If yes, complete EXPECTED SUBMISSION DATE).

X

NO

EXPECTED
SUBMISSION
DATE (15)

MONTH

DAY

YEAR

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

On December 27, 1998, at approximately 0430 CST, while returning Emergency Diesel Generator (EDG) G04 to service following performance of its monthly functional test, we discovered that the automatic start feature for the Train "B" service water pumps was not functional. This feature is designed to start the Train "B" service water pumps upon closure of the EDG G04 output breakers. This feature failed to function because the power to the Unit 2 Train "B" safeguards relay rack, which provides power to this auto start function, was danger tagged. During the EDG functional test, the emergency power supply to 2A06 is considered inoperable. While investigating this condition, we determined that the Unit 2 Train "A" safeguards relay racks were also danger tagged. As a result, the automatic start signal for the Train "A" service water pumps upon G01 or G02 output breaker closure to bus 2A05 was also not functional.

With the standby emergency power supply to both Unit 2 safeguards buses 2A05 and 2A06 out of service the provisions of TS 15.3.0.B concerning "limitations beyond those specified in the permissible conditions of the LCO" became applicable to Unit 1. This is reportable in accordance with 10 CFR 50.73(a)(2)(I)(B). Upon discovery, the danger tags for the Unit 2 Train "A" safeguards rack were cleared and the equipment reenergized.

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

Event Description:

On December 27, 1998, at approximately 0430 CST, while returning Emergency Diesel Generator (EDG) G04 to service following performance of its monthly functional test, TS-84, "Emergency Diesel Generator G04 Monthly," we discovered that the automatic start feature for the Train "B" service water pumps (P-32C, D and E) was not functional (CR 98-4173). This feature is designed to start the Train "B" service water pumps upon closure of the G03 or G04 EDG output breaker to bus 2A06, the Unit 2 Train "B" 4.16KV Safeguards Bus. This feature failed to function because the power to the Unit 2 Train "B" safeguards relay rack, (2C-166/167), which provides power to this auto start function, was danger tagged deenergized while conducting main control board wire separation activities. Because the G04 EDG is not dependant on service water for cooling, this auto start feature is not required for 2A06 standby emergency power operability when aligned to G03 or G04, or G04 operability specifically.

While investigating this condition, we determined that the Unit 2 Train "A" safeguards relay racks (2C-156/157) were also danger tagged deenergized on this same tag out (2-DT-98-1697). As a result, the automatic start signal for the Train "A" service water pumps (P-32 A, B, and F) upon G01 or G02 output breaker closure to bus 2A05, Unit 2 Train "A" 4.16KV Safeguards Bus, was not functional. Since this feature is required for 2A05 standby emergency power operability, the standby emergency power to 2A05 and EDG G02 were declared inoperable and a seven day LCO entered in accordance with Technical Specification (TS) 15.3.7.B.1.g for Unit 1 at 0444 CST. This condition existed from the time the tag out of the Train "A" safeguards relay rack was placed at approximately 0600 on December 23, 1998. Point Beach Unit 1 was operating at 100% power and Unit 2 was in a refueling shutdown and defueled. G01 remained operable due to its alignment to 1A05 for supply of emergency power. G03 also remained operable and aligned to 1A06 for supply of emergency power.

At 0148, EDG G04 had been declared out of service for the TS-84 functional test mentioned above and a seven day LCO was entered per TS 15.3.7.B.1.f for standby emergency power supply to 2A06 out of service for Unit 1. (This LCO was exited at 0432 CST when the G04 EDG was returned to service.) At that time, it was not recognized that the emergency standby power to 2A05 was also out of service. With the standby emergency power supply to both Unit 2 safeguards buses 2A05 and 2A06 out of service the provisions of TS 15.3.0.B concerning "limitations beyond those specified in the permissible conditions of the LCO" became applicable to Unit 1. This is reportable in accordance with 10 CFR 50.73(a)(2)(I)(B) as, "any operation or condition prohibited by the plant's Technical Specifications." This condition existed from 0148 CST until 0432 CST December 27, 1998, when G04 was returned to service.

Subsequent to 0444 CST when the standby emergency power to 2A05 was declared out of service, G02 was tested satisfactorily and returned to service at 1219 CST on December 27. The tag out on the Unit 2 Train "A" safeguards rack was removed and the rack reenergized. The auto start feature for the "A" train service water pumps was tested satisfactorily and the Unit 1 seven day LCO per TS 15.3.7.B.1.g was exited.

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		1998	- 029	- 00	

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

Cause:

The cause of this event was the failure to recognize the full significance of deenergizing the Unit 2 safeguards relay racks. The licensee's staff did not recognize the significance of this tag out in that it disabled the automatic start feature for the service water pumps upon closure of the EDG G01 and G02 output breaker to 2A05. This tag out resulted in standby emergency power to 2A05 becoming inoperable, which should have resulted in a seven day LCO being entered per TS 15.3.7.B.1.g. Additionally, the inoperability of 2A05 should have prevented the entry into TS 15.3.0.B by the removal for testing of G04.

Corrective Actions:

Upon discovery that the automatic start feature for service water pumps for G01 and G02 output breaker closure to 2A05 was not functional, a seven day LCO was entered. The EDG G02 was functionally tested in accordance with TS 82. The danger tags for the Unit 2 Train "A" safeguards rack were cleared and the equipment reenergized. The service water automatic start feature was tested satisfactorily.

An apparent cause investigation was completed which identified and recommended corrective actions. These included programmatic expectations concerning the required detail in evaluation and work plan documentation to include adequate detail to provide direction for tag out development.

A root cause evaluation is being conducted (RCE 98-214) to identify why the equipment tag out process failed to identify the significance and ultimate operability impact of this event. Corrective actions identified under this root cause evaluation will be tracked to completion under the PBNP corrective action program.

Component and System Description:

The Point Beach Nuclear Plant, Unit 1 and 2, has four emergency diesel generators, G01 through G04, which provide standby emergency power to the 4.16 KV safeguards buses. G01 and G02 are "A" train EDGs and are normally aligned to provide the standby emergency power to the "A" train safeguards buses (1A05 and 2A05) in Unit 1 and 2 respectively. G03 and G04 are "B" train EDGs and are normally aligned to the "B" train safeguards (1A06 and 2A06) in Units 1 and 2 respectively. G01 and G02 are dependant on the service water system for cooling. G03 and G04 are cooled via a closed cycle cooling system through air cooled radiators.

The service water system at PBNP includes six service water pumps. Three service water pump motors are supplied by A Train 480V safeguards buses (P32A and B on 1B03 and P32F on 2B03 fed from 1A05 and 2A05 respectively) and three are supplied by B Train 480 V safeguards buses (P32C on 1B04 and P32 D and E on 2B04 fed from 1A06 and 2A06 respectively). Any three service water pumps are capable of providing the necessary cooling capacity for the essential loads for an accident affected unit and supply service water for the normal operation of the unaffected unit loads.

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The automatic start feature for the service water pumps is designed to start the Train "A" service water pumps when the output breakers for G01 or G02 close to 1A05 or 2A05. This feature is considered to be required for 1A05 or 2A05 standby emergency power operability. Closure of the output breakers for G03 or G04 to 1A06 or 2A06 will start the "B" Train service water pumps. However, since the service water system is not required for G03 or G04 operability, this feature is not required for operability of 1(2)A06 standby emergency power.

Safety Assessment:

In the event of a design basis accident the SW system provides cooling to essential heat exchangers and coolers. Any three SW pumps are capable of providing the necessary cooling capacity for the essential loads for an affected unit (Unit 1 in this case) and supply service water for the unaffected unit (Unit 2 in this case). In addition to the auto start functions discussed above, sensed undervoltage on the Unit 1 4160 V safe guards buses (1A05 and 1A06) would result in the start of the "A" and "B" train service water pumps. During this event, closure of an EDG output breaker onto either the 2A05 or 2A06 safe guards bus would not start any service water pumps. Three service water pumps would start and run even with loss of 2A05 and 2A06 since they receive their power from 1A05 and 1A06.

Additional service water pumps can be started as necessary. The operations crew is directed by Emergency Operating Procedure, EOP-0, "Reactor Trip or Safety Injection," Step 9, to start pumps as necessary after the initial safety injection EDG loading sequence is complete. This direction is invoked only if less than four pumps are running after the initial EDG loading sequence is complete.

A safety injection signal from Unit 1 would have started the required service water pumps to respond to an emergency with the above deficiency in place.

During the short time that G04 was inoperable during its test and G02 was considered inoperable due to the loss of automatic service water start based upon the 2A05 auto start control power isolation, the plant was in a condition prohibited by Technical Specifications. The time in this condition was less than the shutdown time required by Technical Specification 15.3.0.B.

Therefore, the health and safety of the public or plant personnel was not compromised by the event which is described in this LER.

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System and Component Identifiers:

The Energy Industry Identification System component function identifier for each component/system referred to in this report are as follows:

<u>Component/System</u>	<u>Identifier</u>
Essential Service Water System	BI
ESF Actuation System	JE
Pump	P
Breaker	BKR
Relay	RLY

Similar Occurrences:

A review of recent LERs (past two years) identified the following events:

<u>LER NUMBER</u>	<u>Title</u>
266/97-010-00	SW and CCW Technical Specification Action Requirements Not Met