



Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360

June 20, 2016

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Licensee Event Report 2016-002-00, Online Maintenance Test Configuration
Prohibited By Technical Specifications

Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
Docket No.: 50-293
Renewed License No.: DPR-35

LETTER NUMBER: 2:16.034

Dear Sir or Madam:

The attached Licensee Event Report (LER) 2016-002-00, Online Maintenance Test Configuration Prohibited By Technical Specifications, is submitted in accordance with 10 CFR 50.73.

If you have any questions or require additional information, contact me at (508) 830-8323.

This letter contains no commitments.

Sincerely,

A handwritten signature in black ink that reads "Everett P. Perkins, Jr." with a stylized flourish at the end.

Everett P. Perkins, Jr.
Manager, Regulatory Assurance

EPP/jjl

Attachment: Licensee Event Report 2016-002-00, Online Maintenance Test Configuration
Prohibited By Technical Specifications (8 pages)

IEZZ
NRR

cc: Mr. Daniel H. Dorman
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
2100 Renaissance Blvd., Suite 100
King of Prussia, PA 19406-2713

Ms. Booma Venkataraman, Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop O-8C2A
Washington, DC 20555

NRC Senior Resident Inspector
Pilgrim Nuclear Power Station

Attachment

Letter Number 2.16.034

Licensee Event Report 2016-002-00

Online Maintenance Test Configuration Prohibited By Technical Specifications

(8 Pages)



LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Pilgrim Nuclear Power Station	2. DOCKET NUMBER 05000293	3. PAGE 1 OF 8
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4. TITLE
Online Maintenance Test Configuration Prohibited By Technical Specifications

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	19	2016	2016	- 002 - 00		06	20	2016	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
N	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL 100	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.71(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT Mr. Everett P. Perkins, Jr. - Regulatory Assurance Manager	TELEPHONE NUMBER (Include Area Code) 508-830-8323
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
D	EA	NA	NA	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
<input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO		08	18	2016

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)
On April 19, 2016, at approximately 1450 hours, it was discovered that a maintenance activity performed between 2010 hours on August 26, 2014 and 0143 hours on August 27, 2014, had rendered the Startup Transformer (X4) and the standby Emergency Diesel Generators (EDG) (X-107A&B) unable to automatically supply power to Buses A5 and A6, due to the breaker interlock that would prevent Startup Transformer breakers (152-504 and 152-604) and standby EDG breakers (152-509 and 152-609) from closing, when Bus A8 to Bus A5 breaker (152-501) and Bus A8 to Bus A6 breaker (52-601) are in the TEST position and CLOSED. During the maintenance activity, the plant was operating at 100 percent power and the Auxiliary Transformer (X3) was providing power to Emergency Buses A5/A6.

The functional testing of negative sequence relays (146-600/A and B) and 23kV feed undervoltage relays (127-600A/1 and 2, and 127-600B/1 and 2) created a test configuration, lasting less than 1-hour, whereby power to Buses A5 and A6 was not automatically available from either the startup transformer or from the EDGs. As a result, Limiting Conditions for Operation (LCO) 3.9.B.2 was not met.

Since this event occurred in the past, no immediate actions were required. The causal evaluation and the identification of corrective actions for this event are ongoing. A supplemental report, to provide additional information, is expected to be submitted by August 18, 2016. There was no impact to public health and safety.

NRC FORM 366
(11-2015)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104

EXPIRES: 10/31/2018


**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Pilgrim Nuclear Power Station	05000293	2016	002	00

NARRATIVE
BACKGROUND

There are six 4,160 volt alternating current (AC) buses (A1, A2, A3, A4, A5, and A6) in the station auxiliary power distribution system. The six buses are divided into emergency service and normal service buses. The two emergency service buses, A5 and A6, supply power to essential loads required during abnormal operational transients and accidents. The four normal service buses, A1, A2, A3, and A4, supply power to other station auxiliaries requiring AC power during planned operations. The maintenance activity had no effect on the normal service buses.


When the Pilgrim Nuclear Power Station (PNPS) is on line and buses A5 and A6 are powered from the Unit Auxiliary Transformer, on a turbine trip or reactor scram, Buses A5 and A6 should fast transfer to the startup transformer or dead bus transfer to EDGs if the startup transformer is unavailable or dead bus transfer to the shutdown transformer if both the startup transformer and EDGs are unavailable.

Another 4160 volt bus, Bus A8, is powered from either the shutdown transformer through Breaker A802 or the Station Blackout Diesel Generator (SBODG) through Breaker A801. Bus A8 provides power to Emergency Bus A5 through Breakers A600 and A501 and to Emergency Bus A6 through Breaker A600 and A601. Relays in the Bus A8 to Bus A5 and Bus A8 to Bus A6 control circuits are tested while the plant is online, at a two year interval, in accordance with Procedure 3.M.3-1, A5/A6 Buses 4kV Protective Relay Calibration/Functional Test and Annunciator Verification, Attachment 10, Bus A8 to A5 & A6 Relays. See Figure 1 for bus and breaker arrangement.

Procedure 3.M.3-1, Revision 136, step 6.2[5] and Attachment 10, provide a caution that during the performance of Attachment 10, with breakers 152-501 and 152-601 in the TEST position and CLOSED, in the presence of a plant Scram neither A5 nor A6 would automatically transfer to the Startup Transformer rendering both buses unavailable. Based upon this caution, activity risk compensatory measures for the August 26, 2014 and August 27, 2014, maintenance activity, included a compensatory measure for dedicated operators to be briefed and positioned such that in the event of a plant trip the 152-501 and 152-601 breakers would be tripped to restore the automatic load transfer function. The compensatory measure is a simple single control switch manipulation by a dedicated operator.

For general information, when a 4160 volt breaker is required to be in TEST position, the breaker shall have been racked down, test position spindle inserted, test position cable assembly in place, 125 volt direct current (DC) control knife blade disconnect in closed position, and 4160 volt breaker springs charged.

As specified under Limiting Conditions for Operations (LCO) 3.9.B.2, "From and after the date that incoming power is not available from both startup and shutdown transformers, continued operation is permissible, provided both diesel generators and associated emergency buses remain operable, all core and containment cooling systems are operable, and reactor power level is reduced to 25 percent of design."

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NARRATIVE**EVENT DESCRIPTION**

On April 19, 2016, at approximately 1450 hours, it was discovered, and documented in the Corrective Action Program under Condition Report CR-PNP-2016-02735, that maintenance activities performed on protective relays between 2010 hours on August 26, 2014 and 0143 hours on August 27, 2014, had rendered the Startup Transformer (X4) and the standby EDGs (X-107A&B) unable to automatically supply power to Buses A5 and A6, due to the breaker interlock that prevents Startup Transformer breakers (152-504 and 152-604) and Standby EDG breakers (152-509 and 152-609) from closing when Bus A5 breaker (152-501) and Bus A6 breaker (52-601) are in the TEST position and CLOSED. With incoming power unavailable from the shutdown transformer and power not automatically available from the startup transformer or the standby EDGs, the Limiting Conditions for Operation (LCO) 3.9.B.2 was not met. See Figure 1 for bus and breaker configuration.

During functional testing of negative sequence relays 146-600/A and B undervoltage relays 127-600A/1 and 2 and 127-600B/1 and 2, breakers 152-501 (shutdown transformer supply to Bus A5) and 152-601 (shutdown transformer supply to A6) are closed briefly and tripped on three different occasions in accordance with Procedure 3.M.3-1, Attachment 10. Based on initial review of associated alarm data, operator logs, and interviews with maintenance personnel, the combined duration when breakers 152-501 and 152-601 were in the TEST position and CLOSED, is estimated to be less than 1-hour.

Since this event occurred in the past, no immediate actions were required. The next functional test is scheduled to be performed on August 29, 2016, in accordance with Work Order (WO)-52581885. However, the Work Order (WO-52581885) has been placed on administrative hold pending completion of the causal evaluation related to this event and the implementation of associated corrective actions.

CAUSE OF THE EVENT

The investigation is continuing and the causal evaluation for this condition is ongoing. Investigation results may also have an impact on the applicable reporting requirements and potential safety consequences. A supplemental report, to complete the required LER information, is expected to be submitted by August 18, 2016. While performing the extent of condition review for this event, it was discovered, and entered into the Corrective Action Program under CR-PNP-2016-04139, that surveillance procedure 3.M.3-29, Shutdown Transformer and 23kV Relay Calibration and Functional Test, may place the plant in a condition similar to Procedure 3.M.3-1. Further information regarding the extent of condition will be provided in the supplement to this report.

CORRECTIVE ACTIONS

The causal evaluation and the formulation of associated corrective actions for this event are ongoing. A supplemental report, that will include a description of any corrective actions planned as a result of the event, is expected to be submitted by August 18, 2016.

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**LICENSEE EVENT REPORT (LER)
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NARRATIVE
SAFETY CONSEQUENCES

During the performance of maintenance activities on August 26, 2014 and August 27, 2014, PNPS remained online at 100 percent power with 4160 volt emergency buses A5 and A6 powered from the Unit Auxiliary Transformer (X4). Therefore, there were no actual safety consequences related to the event and there was no adverse impact on the public health or safety.

To understand the potential safety consequences and implications of the event, a brief description of the station electrical power system is provided below:

The station electrical power system consists of unit and preferred (345 kV Offsite) AC power sources, the secondary (23 kV Offsite) AC power source, the station blackout AC power source, auxiliary power distribution system (APDS), standby EDG AC power source, 125/250 V DC power source, 24 V DC power source, and the 120 V AC power source.

The station preferred (345 kV Offsite) AC power source provides AC power to all station auxiliaries required for startup and shutdown and is normally in use when the unit AC power source is unavailable.

The secondary (23 kV Offsite) AC power source provides AC power to essential station auxiliaries. It is used to supply essential station auxiliary loads only when the main generator is shut down and there is a failure of the preferred (345 kV Offsite) AC power source and failure of a standby onsite EDG AC power source.


The station APDS distributes all AC power necessary for plant startup, operation, or shutdown. All portions of this distribution system receive AC power from the unit AC power source or the preferred (345 kV Offsite) AC power source. The emergency service portions of this distribution system also can receive AC power from the secondary (23 kV Offsite) AC power source, the standby EDG AC power source, or the station blackout generator AC power source.

The standby EDG AC power source provides two independent diesel generators as the onsite sources of AC power to the emergency service portions of the station APDS. Each onsite source provides AC power to safely shut down the reactor, maintain the safe shutdown condition, and operate all auxiliaries necessary for station safety.

The station 125/250 V DC Power System provides two independent onsite sources of DC power for startup, operation, shutdown, and all loads essential to station safety.

The station 24 V DC Power System, provides a reliable onsite source of power to some radiation monitoring instrumentation.

The station 120 V AC Power System provides a versatile distribution system to supply AC power to the station computer, instruments, and control devices requiring uninterruptable power and conventional instrumentation, and monitoring systems.

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NARRATIVE

The station blackout AC power source provides an independent diesel generator as the onsite source of AC power to the emergency service portions of the APDS in the unlikely event of a loss of preferred (345 kV Offsite) and secondary (23 kV Offsite) power sources combined with a complete failure of the standby EDG AC power sources. The blackout AC power source is connected to the station through a two-breaker 4.16 kV Bus A8 with the blackout diesel generator connected to the first breaker, A801, and the shutdown transformer connected to the second breaker, A802.

The assessment of potential safety consequences considers potential transient and accident conditions that could have occurred during the event and how the event or condition(s) could have prevented fulfillment of a safety function. The assessment also considers the availability of systems that could perform required safety functions.

Maintenance testing performed between August 26, 2014 and August 27, 2014, that would prevent the automatic transfer of offsite and onsite power sources to Buses A5 and A6 in the event of a turbine trip or reactor scram, could have resulted in the loss of automatic safety functions, including those performed by the Core Spray, Salt Service Water, Reactor Building Closed Cooling Water, Low Pressure Coolant Injection, Standby Gas Treatment, and Standby Liquid Control Systems, had power been lost to Buses A5 and A6 as the result of a turbine trip or reactor scram.

During a loss-of-offsite power (LOOP) event, all incoming AC power to the plant is lost, resulting in a turbine trip and reactor scram.

Following a LOOP, turbine trip, and reactor scram, with breakers 152-501 and 152-601 in the TEST position and CLOSED, although the EDGs would receive start signals, the shutdown transformer breaker logic would prevent the EDG output breakers (152-509 and 152-609) to Buses A5 and A6 from closing, causing the onsite standby AC power source (i.e., both EDGs) to also be unavailable to automatically power Buses A5 and A6. However, manually tripping breaker 152-501 would restore the capability to power Bus A5 from the EDG power source and manually tripping breaker 152-601 would restore the capability to power Bus A6 from the EDG power source. Restoration of power to either Bus A5 or Bus A6 would restore the affected safety system functions.

The loss of all offsite AC power with failure of the standby EDGs to energize Buses A5 and A6 results in a station blackout. Symptoms of a station blackout event include indicated voltage dropping to zero on all AC powered buses except Vital Services Panel Y2, plant lights going off, and emergency lighting coming on.

Had the resulting consequence of the August 26, 2014 and August 27, 2014 maintenance testing been a station blackout, PNPS Procedure 5.3.31, Station Blackout, would have been entered and the prescribed immediate and subsequent actions taken until the preferred (345 kV Offsite) power source or the standby (onsite) EDG power source was restored.

The unaffected power sources include: 1) The station 125/250 V DC Power System, that provides two independent onsite sources of DC power for startup, operation, shutdown, and loads essential to station safety. 2) The station 24 V DC Power System provides a reliable onsite source of power to some radiation

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NARRATIVE

monitoring instrumentation. 3) The station 120 V AC Power System (Y2) provides a versatile distribution system to supply AC power to the station computer, instruments, and control devices requiring uninterruptable power and conventional instrumentation, and monitoring systems.

The High Pressure Coolant Injection (HPCI) System, the Reactor Core Isolation Cooling (RCIC) System, and the main steam safety relief valves all remained operable and available during the relay testing. These systems are not dependent on the availability of AC power.

The HPCI system provides and maintains an adequate coolant inventory inside the reactor vessel to prevent fuel clad melting as a result of postulated small breaks in the nuclear system process barrier. A high pressure system is needed for such breaks because the reactor vessel depressurizes slowly, preventing low pressure systems from injecting coolant. The HPCI system includes a turbine-driven pump powered by reactor steam. The system is designed to accomplish its function on a short term basis without reliance on station auxiliary power supplies other than the DC power supply.

The RCIC system provides makeup water to the reactor vessel following reactor vessel isolation in order to prevent the release of radioactive materials to the environment as a result of inadequate core cooling. The system operates automatically to maintain sufficient coolant in the reactor vessel so that the integrity of the radioactive material barrier is not compromised. Components necessary for initiating operation of the RCIC system require only DC power from the station battery to operate the valves and controls. The power source for the turbine-driven pump is the steam generated in the reactor pressure vessel by the decay heat in the core. The steam is piped directly to the turbine and the turbine exhaust is piped to the suppression pool. RCIC has a makeup capacity sufficient to prevent the reactor vessel water level from decreasing to the level where the core would be uncovered without the use of core standby cooling systems. The pump suction is normally lined up to both condensate storage tanks.

Each condensate storage tank is designed to provide a reserve of approximately 75,000 gallons for HPCI and RCIC use. The other condensate tank service demands are physically isolated by use of suction lines raised to an elevation above this reserve. Because the volume of water that is usable by HPCI or RCIC within the reserve is reduced to maintain adequate suction nozzle submergence, an additional amount of volume in the CST is administratively controlled to ensure adequate inventory is available for HPCI and RCIC to support an 8 hour station blackout duration.

The availability of HPCI and RCIC during the unavailability of offsite and onsite power sources, ensured reactor water inventory would have been maintained in the event of a turbine trip or reactor scram.

Because the test configuration was brief, less than one hour, and the compensatory measure was a simple single control switch manipulation by a dedicated operator, the potential safety consequence was considered minimal.

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Pilgrim Nuclear Power Station	05000293	2016	002	00

NARRATIVE

REPORTABILITY

This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) as any operation or condition prohibited by the plant's Technical Specifications and; 10 CFR 50.73(a)(2)(v)(A), 50.73(a)(2)(v)(B), 50.73(a)(2)(v)(C) and 50.73(a)(2)(v)(D) as an event or condition that could have prevented the fulfillment of the safety function of a system needed to shut down the reactor and maintain it in a safe shutdown condition, remove residual heat, control the release of radioactive material; or mitigate the consequences of an accident and; 10 CFR 50.73(a)(2)(vii) as any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident. This condition is also reportable under 10 CFR 50.73(a)(2)(ix)(A) as any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to (1) Shut down the reactor and maintain it in a safe shutdown condition; (2) Remove residual heat; (3) Control the release of radioactive material; or (4) Mitigate the consequences of an accident.

PREVIOUS EVENTS

None

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for Components and Systems referenced in this report are as follows:

COMPONENTS: N/A
SYSTEMS: EACODES: N/A
CODES: N/A

REFERENCES

Condition Report CR-PNP-2016-02735
Condition Report CR-PNP-2016-04139
Work Order (WO-52581885)

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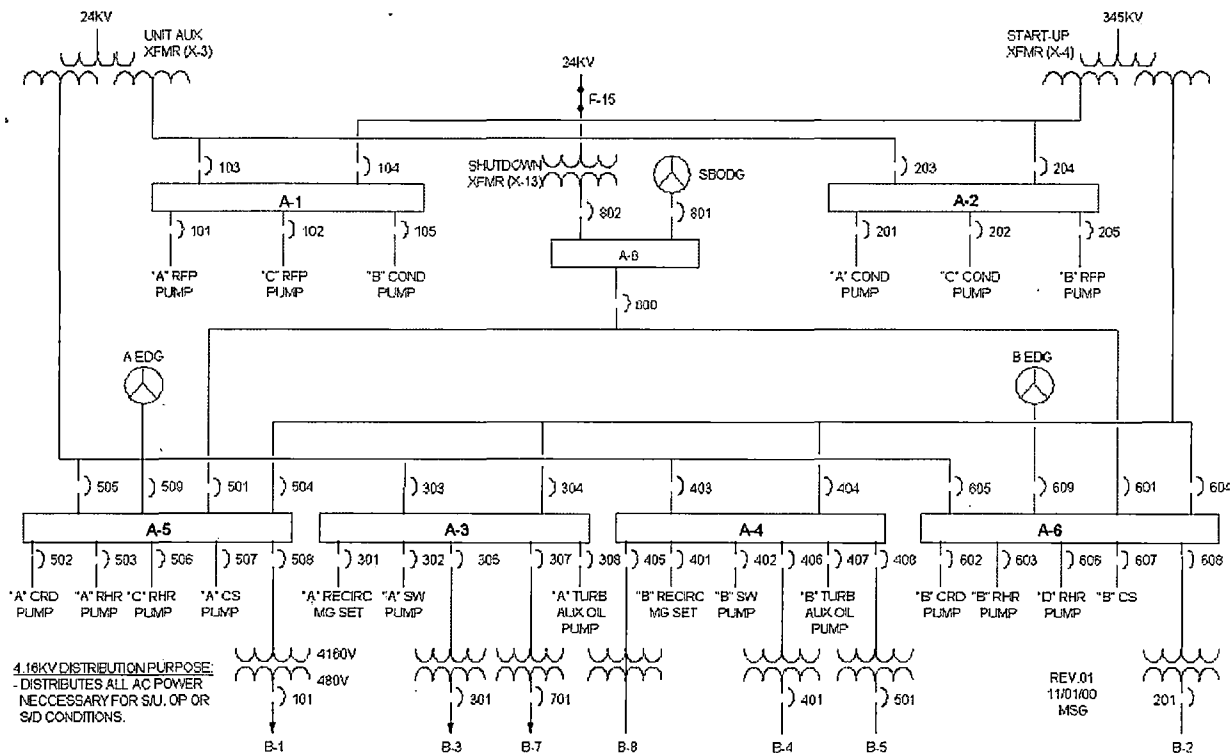
**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Pilgrim Nuclear Power Station	05000293	2016	002	00

NARRATIVE

FIGURE 1



(PROVIDED FOR GENERAL REFERENCE PURPOSES)