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SUBJECT: Forwards responses to Generic Ltr 91-11, "Resolution of Generic Issues 48 'LCOs for Class 1E Vital Instrument Buses & 49 'Interlocks & LCOs for Class 1E Tie Breakers.'"

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February 3, 1992

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Allen R. Johnson
Project Directorate I-3
Washington, D.C. 20555

Subject: Resolution of Generic Issues 48, "LCO's for Class 1E Vital Buses", and 49, "Interlocks and LCO's for Class 1E Tie Breakers" Pursuant to 10CFR 50.54(f) (Generic Letter 91-11) dated July 18, 1991
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Johnson:

Generic Letter 91-11 requested a written response within 180 days to certify that procedures conform to GL 91-11 guidance and can resolve Generic Issues 48 "LCO's for Class 1E Vital Instrument Buses", and 49, "Interlocks and LCO's for Class 1E Tie Breakers" pursuant to 10CFR 50.54 (f).

The attached report describes how Ginna Station meets the guidance of the Generic Letter. As a result of the review performed in responding to these issues, some plant procedures were revised at Ginna Station as an additional measure to ensure that the Generic Letter concerns are addressed.

Very truly yours,

Robert C. Mecredy

Robert C. Mecredy

Attachment

Subscribed and sworn to before me
on this 3rd day of February, 1992

TRACY PAYNE
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MONROE COUNTY
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Attachment I

Response to Generic Letter 91-11

This attachment is in response to Generic Letter 91-11 which was issued to resolve Generic Issues 48, "LCO's for Class 1E Vital Instrument Buses", and 49, "Interlocks and LCO's for Class 1E Tie Breakers". The intent of this review is to ensure that plant procedures include time limitations and surveillance requirements for the following:

1. Vital instrument buses

2. Inverters and other onsite power sources for the vital instrument buses, and

3. Tie breakers and or fuses that can connect redundant class 1E buses (Both ac and dc).

This evaluation required a review of the existing system configuration, operating procedures, and Technical Specification requirements. As a result of this evaluation, adequate justification shall be provided that Ginna Station fulfills the following requirements:

1. Limit the time that Ginna Station is in possible violation of the single failure criterion in regard to the Class 1E vital instrument buses and tie breakers,

2. Require surveillance of these components, and

3. Ensure that, except for the times covered in Item (1), the plant is operating in an electrical configuration consistent with the regulations and its design basis.

Vital Instrument Buses

System Configuration:

Generic letter 91-11 defines vital instrument buses as the 120 VAC buses that provide power for the instrumentation and controls of the engineered safety features (ESF) systems and the reactor protection system (RPS) and are designed to provide continuous power during postulated events including the loss of normal off-site power to critical equipment. The resolution of GI-48 requires that Ginna Station has administrative controls governing operational restrictions for the vital instrument buses and associated inverters.

The 120 VAC instrument supply at Ginna Station is split into four buses (A, B, C and D) which are capable of being supplied by multiple sources. A separate inverter, MQ-483, also provides power to critical instrumentation. The instrument buses supply instrument channels A, B, C and D. Power sources for each instrument bus is summarized as follows:

Instrument Bus A: Normally supplied by inverter A from DC Battery A (Train A). This bus remains continuously energized during a loss of off-site power. Instrument Bus A also has an automatic transfer (static switch) to a safety related constant voltage transformer fed from 480 VAC motor control center C (Train A).

Instrument Bus B: This bus is normally supplied from 480 VAC Bus 14 via MCC-C (Train A) through a constant voltage transformer. Instrument Bus B will de-energize on a loss of off-site power and is restored when the Emergency Diesel Generator closes in on Bus 14.

Instrument Bus C: Normally supplied by inverter C from DC Battery B (Train B). This bus remains continuously energized during a loss of off-site power. Instrument Bus C also has an automatic transfer (static switch) to a safety related constant voltage transformer fed from 480 VAC motor control center D (Train B).

Instrument Bus D: This bus is normally supplied from 480 VAC Bus 15 via MCC-B (non safety related) through a constant voltage transformer. Instrument Bus D will de-energize on a loss of off-site power. This bus will re-energize when power is restored to non-class 1E Bus 15.

Inverter MQ-483: A third inverter, MQ-483, powered from Battery A (Train A) provides power to critical channel D instruments to assure the availability of safety related systems and to prevent actuations during a loss of offsite power. This inverter does not have a backup supply.

A review of the power sources for the instrument buses indicates that during a loss of offsite power, Instrument Channels A and C and MQ-483 will remain continuously energized. These buses meet the Generic Letter 91-11 definition for vital instrument buses. At Ginna Station buses A, B, C and MQ-483 are considered safety related supplies. Bus D is considered non-safety related.

Instrument buses A, B, C and D have a maintenance supply from non-class 1E bus 13 MCC-A via a constant voltage transformer. The connection to the maintenance supply is performed by manually switching a pair of mechanically interlocked breakers. The breakers are configured such that paralleling of redundant sources is prevented. Operating with the instrument buses being fed from their backup supplies could result in the plant not satisfying the single failure criterion.

Time Constraints:

A review was performed of existing operating procedures and Technical Specification requirements for constraints that limit the time that an instrument bus could be powered from the alternate supply. No procedures were identified that limited this time. Although no specific time constraints could be identified, the operating practice of Ginna Station has been to limit the duration the plant operates with an instrument bus fed from its alternate supply.

Requirements have been added to existing plant procedures that will limit the time duration that the safety related instrument buses can be fed from power sources other than their normal supplies.

Surveillance Requirements:

A review was performed of the existing system configuration and operating procedures to assure adequate surveillance requirements exist to ensure proper alignment of the instrument bus supplies.

The existing design is such that continuous monitoring of the inverters supplying vital instrument buses A and C is provided by control room annunciation. If the supply to these vital instrument buses transfers from the inverters to the alternate supply there is annunciation in the control room and indication on the inverters. Existing operating procedures require that inverters be inspected once every shift to verify they are aligned correctly.

The maintenance supply breakers for the instrument buses are administratively controlled. Whenever the instrument buses are aligned to the maintenance supply, procedures ensure they are realigned to their normal supply following completion of the maintenance activity. The instrument bus panels are in the control room. They are locked and access is controlled by the shift supervisor. These controls ensure that the instrument buses will not be aligned inadvertently to the maintenance supply during normal operating conditions.

The existing surveillance requirements, operating procedures together with our administrative controls provide sufficient assurance that the plant operates in an electrical configuration consistent with its design basis.

Tie Breakers for the Class 1E AC Buses

System Configuration:

The vital 480 VAC system is divided into four class 1E buses, Buses 14, 16, 17 and 18. Emergency power to Bus 14 and 18 is provided by Emergency Diesel Generator 1A and to buses 16 and 17 are by Emergency Diesel Generator 1B. Tie breakers exist between Buses 14 and 16 and Buses 17 and 18. The tie between Buses 14 and 16 consists of a breaker in each bus, one manually operated and the other electrically operated. The tie between buses 17 and 18 consists of a single electrically operated breaker.

The control scheme for the tie between Buses 14 and 16 consists of the following:

1. The electrically operated bus tie breaker can be closed only if either bus 14 or 16 is deenergized from its normal and emergency sources, thus preventing inadvertent closure.

2. The diesel generator and normal supply breakers on buses 14 and 16 will not close if the electrically operated tie breaker is closed.

3. The electrically operated bus tie breaker is automatically tripped on safety injection and/or undervoltage conditions.

The tie breaker for Buses 17 and 18 is maintained in the test position (which prevents closure electrically and mechanically) above cold shutdown. When the breaker is racked in (below cold shutdown), the control scheme consists of the following:

1. The bus tie breaker can only be closed if either bus 17 or 18 is deenergized from its normal and emergency sources, thus preventing inadvertent closure of the breaker.

2. The diesel generator and normal supply breakers on buses 17 and 18 will not close if the tie breaker is closed.

3. The tie breaker is automatically tripped on safety injection and/or undervoltage conditions.

Time Constraints:

A review was performed of existing operating restrictions and Technical Specification requirements to assure that constraints existed that limited the closure of the tie breakers. Existing Technical Specification requirements specify the tie breakers between Buses 14 and 16 and Buses 17 and 18 remain open when the plant is above cold shutdown conditions (Above 200°F).

Surveillance Requirements:

A review was performed of the existing system configuration and operating procedures to assure that adequate surveillance requirements exist to assure that bus tie breakers are open.

The system design is such that closure of either the electrically operated tie breaker between Busses 14 and 16 and the breaker between 17 and 18 are annunciated in the control room. Therefore continuous monitoring of the breaker status is maintained. In addition, existing operating procedures require daily verification that the tie breakers are open. The Technical Specification requires surveillance of the tie breakers at least once every 7 days.

Interties Between the Class 1E DC Trains

System Configuration:

The 125 VDC system is divided into two class 1E trains (A and B) and one non-class 1E system. The only common tie between the two class 1E dc trains is via an intertie with the non-safety related Technical Support Center dc system. The intertie is designed so that either class 1E battery train can be removed from service. This intertie is utilized only during maintenance, testing or abnormal plant conditions. The intertie is also configured so both class 1E battery systems can be paralleled simultaneously through the Technical Support Battery. Existing procedures permit this condition only during specific Appendix R conditions in which some process instrumentation from both trains required for long term cooldown. Paralleling both safety related dc trains is restricted by two separate key locks on the throwover switches and separate locked disconnect switches in each battery room. Keys to these switches are controlled by the shift supervisor.

Time Constraints:

A review was performed of existing operating procedures and Technical Specification requirements to assure existing constraints restrict the connection of both class 1E DC trains simultaneously. Existing Technical Specification requirements specify both class 1E batteries and dc system trains be operable when the plant is above cold shutdown (Above 200°F). Existing procedures do not allow the connection of either class 1E train to the technical support center under normal operating conditions.

Surveillance Requirements:

A review was performed of the existing system configuration and operating procedures for adequate surveillance requirements to assure that class 1E DC trains are not tied together.

Existing procedures provide specific separation steps at the completion of testing or maintenance when interties between a class 1E dc system and the technical support center dc system occur. The interties and disconnect switches are locked open and the keys are controlled by the shift supervisor. There are no procedures that allow the intertie of either class 1E dc system with the technical support center dc system under normal operating conditions.

Conclusion:

The review of existing system configurations, procedures, and Technical Specification requirements identified concerns in regards to the time limits established for the vital instrument buses. As a result of these concerns plant procedures have been revised which will provide assurance that the electrical configuration is consistent with the Ginna Station design basis. The revised procedures and the system design provide adequate assurance that the following Generic Letter concerns have been addressed:

1. Limit the time that Ginna Station is in possible violation of the single failure criterion in regard to the Class 1E vital instrument buses and tie breakers,

2. Require surveillance of these components, and

3. Ensure that, except for the times covered in Item (1), the plant is operating in an electrical configuration consistent with the regulations and its design basis.