Iowa Electric Light and Power Company

March 18, 1980
LDR-80-80

LARRY D. ROOT
ASSISTANT VICE PRESIDENT
NUCLEAR GENERATION

RTS-950

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

In accordance with 10CFR50.59 and 50.90, we transmitted our application of August 30, 1977 for amendment of DPR-49 and the technical specifications for the Duane Arnold Energy Center (DAEC). We hereby amend that application with the enclosed.

We are also amending our response to item 2 of enclosure 2 to our August 30, 1977 application with the enclosed response. The above modifications are being made in response to questions from members of your staff.

We have conformed the enclosed with the BWR Standard Technical Specifications to the maximum extent possible without additional modifications to those proposed in our August 30, 1977 submittal. The only surveillance requirement not conforming is the frequency of functional testing in Table 4.2-B item 13a. Iowa Electric will modify the design of these relays to allow monthly functional testing during the 1981 refueling outage. A technical specification will be proposed for NRC issuance during the 1981 refueling outage.

The application has been reviewed and approved the the DAEC Operations Committee and the DAEC Safety Committee. This application does not involve a significant hazards consideration.

Three signed and notarized originals and thirty-seven (37) additional copies of this application are transmitted herewith. This application, consisting of the foregoing letter and enclosures hereto, is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

By: Larry D. Root

Larry D. Root
Assistant Vice President
Nuclear Generation

LDR/KAM/mz
Enclosure (2)
cc: K. Meyer
D. Arnold
S. Tuthill
L. Liu
D. Mineck
J. Van Sickle
T. Kevern (NRC)
File: A-117, A-107a
R-40

Subscribed and Sworn to before me on this 18th day of March, 19 80.

Notary Public in and for the State of Iowa

PROPOSED CHANGE RTS-95a TO DAEC TECHNICAL SPECIFICATIONS

I. Affected Technical Specifications

Appendix A of the Technical Specifications for the DAEC (DPR-49) provides as follows:

Table 3.2-B, "Instrumentation that Initiates or Controls the Core and Containment Cooling Systems," provides, among other trip level settings, the 4 KV emergency power system voltage relay trip level settings.

Table 4.2-B, "Minimum Test and Calibration Frequency for CSCS," provides, among other test and calibration frequencies, the test and calibration frequency for 4 KV Emergency Power System Voltage Relays.

Specification 4.8.A.1.b provides the surveillance requirement for testing the diesel-generators once per operating cycle. The test includes simulating the condition under which the diesel-generator is required and verifying that it will start and accept the emergency load within the specified time sequence.

The bases for Specification 4.8 (pages 3.8-12) includes a description of the test specified in Specification 4.8.A.1.b.

II. Proposed Changes in Technical Specifications

The licensees of DPR-49 propose the following changes in the Technical Specifications set forth in I above:

To Table 3.2-B, delete the trip level setting of 20 percent of rated voltage for the 4 KV emergency bus undervoltage relay. Replace it with a trip level setting of $20 \leq V \leq 28$ volts.

On Table 3.2-B, list the additional undervoltage relays that are proposed for the 4 KV emergency buses. Complete the columns of the Table as follows. Minimum number of operable instrument channels per trip system: 1 per 4 KV bus (7). Trip function: 4 KV emergency bus degraded voltage relay. Trip level setting: $108 \leq V \leq 111$ volts, $8.0 \leq T.D. \leq 8.5$ seconds. Number of instrument channels provided by design: 1 matrix per bus. Remarks: 1. Trips 4 KV emergency bus incoming breakers; 2. Starts diesel; 3. Permits sequencing of vital loads.

To the Notes for Table 3.2-B, add Note 7. The note should read: Four undervoltage relays with integral timers per 4 KV bus. The relay output contacts are connected to form a one-out-of-two-twice coincidence logic matrix. With one relay inoperable, operation may proceed provided that the inoperable relay is placed in the tripped condition within one hour.

On Table 4.2-B list the proposed degraded voltage relays functional test for once/month and calibration frequency as once/operating cycle. Revise the calibration frequency for existing 4 KV relays to once/operating cycle.

To Specification 4.8.A.1.b, expand the surveillance requirement for functionally testing the diesel-generators. Add the following two sentences after the first sentence of paragraph b. The diesel-generator shall be operated for a minimum of 5 minutes. An interruption of the diesel-generator will then be simulated to demonstrate that upon subsequent reconnection, it will again accept the emergency load within the specified time sequence.

To the Bases for Specification 4.8 (page 3.8-13), expand the description of the test specified in Specification 4.8.A.1.b. Add the following two sentences after the fourth sentence of the second paragraph. After operating for a minimum of 5 minutes, an interruption of the diesel-generator will be simulated. After a load shed, the subsequent reconnection will be checked to assure that loading of the diesel-generator is again through the load sequencer in the time required.

III. Justification for Proposed Changes

Existing undervoltage relays automatically perform the required function of switching the essential buses from off-site power to the redundant diesel-generators when the monitored voltage drops below 65.6 percent of nominal voltage. These undervoltage relays are designed to function on a complete loss of off-site power.

With a cover letter dated June 2, 1977, the NRC sent Iowa Electric a copy of their document "Safety Evaluation and Statement of Staff Positions Relative to the Emergency Power Systems for Operating Reactors". Summarizing, this paper stated that whenever the off-site essential bus power sources degraded to a point where the reliability of the emergency power system was reduced, the essential buses should be transferred to the on-site power sources. The proposed changes to the Technical Specifications will bring the latter document into agreement with the three positions of the NRC paper.

The feature for automatically load shedding the essential buses at 20.2 percent of nominal voltage is retained when the loads are energized by the diesel-generators. Because this feature is retained, Position 2 requires that Technical Specifications Table 3.2-B be amended to specify a load shed setpoint having maximum and minimum limits.

Position 1 requires that a second level of voltage protection for the on-site power system be provided. As part of this requirement, Technical Specifications Table 3.2-B should be changed to include the limiting conditions for operation and the trip setpoints with maximum and minimum limits for this second level voltage protection. Table 4.2-B should be changed to include the new relays.

Position 3 requires a more extensive functional test of the diesel-generators than is presently being performed at DAEC. Thus, Technical Specification 4.8.A.1.B should be changed to include the additional steps to comply with Position 3. The Bases for Specification 4.8 (page 3.8-12) should also be amended to include the expanded test.

IV. Review Procedures

These proposed changes have been reviewed by the DAEC Operations Committee and Safety Committee which have found that these proposed changes do not involve a significant hazards consideration.

RTS-95a LIST OF PAGES

Page	Comments
3.2-13	No Change
3.2-14	RTS-95a
3.2-15	RTS-95a (This page is also revised by RTS-117)
3.2-16	Revised by RTS-117 and not included.
	Reverse side of 3.2-15
3.2-25	No Change
3.2-26	RTS-95a
3.8-1	No Change
3.8-2	RTS-95a
3.8-11	No Change
3.8-12	RTS-95a

TABLE 3.2-B (Continued)

INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT COOLING SYSTEMS

Minimum No. of Operable Instrument Channels Per Trip System (1)	Trip Function	Trip Level Setting	Number of Instrument Channels Provided by Design	Remarks	
2	Suppression Chamber HPCI Suction Level	$\leq$ 5" above normal water level	2 Inst. Channels	Transfers HPCI pump suction to suppression chamber	28
1	RCIC Turbine High Flow	+ 110" ± 5" H_2O (2)	2 Inst. Channels		28
2	RCIC Turbine Equipment Room High Ambient Temperature	$\leq$ 175 deg. F (2)	4 Inst.		
2	RCIC Vent High Differential Temperature	$\leq \Delta$ 50 deg. F (2)	4 Inst.		
2	RCIC Steam Line Low Pressure	100 > P > 50 psig (2)	4 Inst.		
1	HPCI Turbine Steam Line High Flow	+53" H_2O (Outboard Instr.) +99" H_2O (Inboard Instr.) (3)	2 Inst. Channels		26
2	Suppression Pool Area High Ambient Temperature	150°F	4 Inst. Channels		
2	Suppression Pool Area High Diff. Temperature	50°F	4 Inst. Channels		
1	HPCI Leak Detection Time Delay	15 min.	2 Inst.		

NOTES FOR TABLE 3.2-B

1. Whenever any CSCS subsystem is required by Subsection 3.5 to be operable, there shall be two operable trip systems. If the first column cannot be met for one of the trip systems, that trip system shall be placed in the tripped condition or the reactor shall be placed in the Cold Shutdown Condition within 24 hours.

2. Close isolation valves in RCIC subsystem.

3. Close isolation valves in HPCI subsystem.

4. Instrument setpoint corresponds to 18.5" above the top of active fuel.

5. HPCI has only one trip system for these sensors.

6. The relay drop-out voltage will be measured once per operating cycle and the data examined for evidence of relay deterioration.

7. Four undervoltage relays with integral timers per 4 KV bus. The relay output contacts are connected to form a one-out-of-two-twice coincident logic matrix. With one relay inoperable, operation may proceed provided that the inoperable relay is placed in the tripped condition within one hour.

TABLE 4.2-A (Continued)

MINIMUM TEST AND CALIBRATION FREQUENCY FOR PCIS

Logic System Functional Test (4) (6)	Calibration Frequency (9)
4) Drywell Isolation Valves TIP Withdrawal Atmospheric Control Valves Sump Drain Valves	Once/6 months
5) Standby Gas Treatment System Reactor Building Isolation	Once/6 months

29

3.8 AUXILIARY ELECTRICAL SYSTEM

Applicability:

Applies to the auxiliary electrical power system.

Objective:

To assure an adequate supply of electrical power for operation of those systems required for safety.

Specification:

A. Auxiliary Electrical Equipment

The reactor shall not be made critical unless all of the following conditions are satisfied:

1. Both off-site sources and the startup transformers and standby transformers are available and capable of automatically supplying power to the 4kV emergency buses.

2. The two diesel-generators shall be operable and there shall be a minimum of 35,000 gallons of diesel fuel in the diesel fuel oil tank.

3. All station 24,125 and 250 volt battery systems shall be operable. The associated battery chargers for the 24 volt batteries, two of the three battery

4.8 AUXILIARY ELECTRICAL SYSTEM

Applicability:

Applies to the periodic testing requirements of the auxiliary electrical systems.

Objective:

Verify the operability of the auxiliary electrical system.

Specification:

A. Auxiliary Electrical Equipment

1. Diesel-Generators

a. Each diesel-generator shall be manually started and loaded once each month to demonstrate operational readiness. The test shall continue for at least a one-hour period at rated load.

During the monthly generator test the diesel-generator starting air compressor shall be checked for operation and its ability to recharge air receivers. The operation of the diesel fuel oil transfer pumps shall be demonstrated, and the diesel starting time to reach rated voltage and frequency shall be logged.

4.8 BASES:

The monthly tests of the diesel-generators are conducted to demonstrate satisfactory system performance and operability. The test of the automatic starting circuits will prove that each diesel will receive all automatic start signals. The loading of each diesel-generator is conducted to demonstrate proper operation at maximum expected emergency loading and at equilibrium operating conditions. Generator experience at other generator stations indicates that the testing frequency is adequate to assure a high reliability of operation should the system be required.

Each diesel-generator has two independent starting air supply systems. One consists of a motor driven air compressor which automatically recharges two air receivers and the other consists of a diesel driven air compressor which is manually operated to recharge a third air receiver. During the monthly check of the diesel-generator, both air start systems will be checked for proper operation.

Following the tests (at least monthly) or other operation of the units, the fuel volume remaining in the diesel oil storage tank will be checked.

POSITION 2: Interaction of Onsite Power Sources with Load Shed Features

RESPONSE: Existing undervoltage relays 127-ST11, 127-ST12, 127-SB11, and 127-SB12 monitor the two offsite power sources to each of the two essential 4.16 kV buses. They trip any given essential bus incoming breaker whenever its corresponding supply voltage drops below 65 percent of nominal. If both offsite power sources of an essential bus drop below 65 percent, the relays will start the corresponding diesel generator and signal a loss of offsite power (LOOP) to the corresponding safety actuation system channel.

Existing undervoltage relays 127-31 and 127-41 monitor the voltage of the two essential 4.16 kV buses. A voltage below 65 percent on either essential bus will cause the relay to start the corresponding diesel generator and cease sending a power available signal to the corresponding safety actuation channel. The proposed degraded voltage relay matrices 127-32 and 127-42 will monitor the 4.16 kV essential bus voltages and when a voltage below 92.2 percent of nominal persists for 8.5 seconds on either bus, the respective bus incoming breakers will be tripped, the corresponding diesel generator will be started, and a loss of power signal will be sent to the appropriate safety actuation channel.

3/80

Whenever there is a voltage of 20.2 percent or less of nominal on the buses, a loss of offsite power (LOOP) load shed will occur. During the sequencing of loads on the diesel generators, the bus voltages will not drop below 72 percent of nominal. Thus a load shed will not recur due to motor starting inrush currents. But if a diesel generator breaker trips or a diesel generator voltage drops below 20.2 percent for any reasons, a load shed of the respective bus will recur. Thus the diesel generator breaker can close again and the sequencing of loads on the diesel generator can begin again when the diesel generator voltage returns.