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September 9, 1983

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

Subject: LaSalle County Station Units 1 and 2
Grid Voltage Adequacy
NRC Docket Nos. 50-373 and 50-374

References (a): NUREG-0519, LSCS SER, Paragraph 8.2.2.2 Position (4).

(b): LSCS Preoperational Test PT-AP 103, Emergency Power Redundancy.

Dear Mr. Denton:

Reference (a) stated:

"(4) We require the voltage levels at the safety-related buses shall be optimized for the full load and minimum load conditions that are expected throughout the anticipated range of voltage variations of the offsite power source by appropriate adjustment of the voltage tap settings of the intervening transformers. We also require that the adequacy of the design in this regard be verified by actual measurement and by correlation of measured values with analysis results. Before initial reactor power operation, documentation should be submitted verifying the adequacy of the design."

For LaSalle, Reference (a) proposed that the above requirement could be fulfilled by:

"In regard to Position 4, a description of the method for verfying voltage levels has not been provided. The adequacy of the design in regard to safety-related bus voltage levels must be verified by actual measurement and by correlation of measured values with analysis results. The verification and test should be performed prior to initial reactor operation on all sources of offsite power by:

(1) Loading the station distribution buses, including all Class 1E buses down to the 120/208-volt level, to at least 30 percent;

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(2) Recording the existing grid and Class 1E bus voltages down to the 120/208-volt level at steady state conditions and during the starting of both a large Class 1E and non-Class 1E motor (not concurrently);

Note: To minimize the number of instrumental locations, the bus voltages and loading need only be recorded on the string of buses which previously showed the latest analyzed voltages.

(3) Using the same analytical techniques and assumptions as used in the previous voltage analyses, and the measured existing grid voltage and loading conditions recorded during conduct of the test, derive a new set of analytical values for the Class 1E bus voltages down to the 120/208-volt level;

(4) Compare these analytical values against the test results.

With good correlation between the analytical results and the test result, the test verification requirement will be met.

In general the test results should not be more than 2 percent lower than the analytical results; however, the difference between the two when subtracted from the voltage levels determined in the original analyses should never be less than the Class 1E equipment rated voltages. We require that the above tests, to verify voltage levels, be performed prior to fuel loading with the results verified by our Office of Inspection and Enforcement. We will condition the operating license for Unit 1 to perform this test prior to fuel loading."

The above requirements were performed and evaluated during the Unit 1 preoperation test (Reference (b)).

Because the accuracy of the computer model has been verified as part of the Unit 1 test program, it is felt that any additional verification of the model is needlessly redundant. Instead, it is proposed that for Unit 2 a single set of voltage readings be taken and used to verify that the transformer taps are as specified.

The above proposal has been been discussed with the Senior Resident Inspector, who presented the proposal to NRR. NRR indicated that they foresee no problem with the change, but that we should send a letter to your office to officially inform you of this change. The purpose of this letter, therefore, is to notify you of our intent to revise the FSAR as described above. Attached are marked up pages of the FSAR which are expected to be formally included in the next FSAR amendment.

To the best of my knowledge and belief the statements contained herein and in the attachment are true and correct. In some respects these statements are not based on my personal knowledge but upon information furnished by other Commonwealth Edison and contractor employees. Such information has been reviewed in accordance with Company practice and I believe it to be reliable.

Enclosed please find one signed original and forty (40) copies of this letter and the attachment.

If there are any questions regarding this matter, please contact this office.

Very truly yours,

C. W. Schroeder 9/12/83

C. W. Schroeder
Nuclear Licensing Administrator

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cc: NRC Resident Inspector - LSCS

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TABLE 14.2-6

EMERGENCY POWER REDUNDANCY PREOPERATIONAL TEST

PT-AP103

TEST OBJECTIVES

1. Conduct emergency load tests to demonstrate the ability of ESF Divisions 1, 2, and 3 (on each unit) to independently pick up their assigned loads as shown in Table 8.3-1.

2. Demonstrate the reliability and ability of the diesel generators to pick up the essential electrical loads during a simulated loss of offsite power with and without concurrent LOCA conditions.

3. Verify the ability of the ESF buses to shed nonessential loads and properly sequence the starting of essential loads during simulated accident conditions (LOCA - or loss of offsite power).

4. Verify that the diesel-generator sets and 4160-volt ESF buses provide a reliable source of power for safe shutdown and cooldown of the reactor facility under both normal and faulted conditions (LOCA, and/or loss of offsite power).

5. Verify that the diesel-generator sets and 4160-volt ESF buses can be operated within the limiting conditions established by the design.

6. Essential (ESF) loads are verified with design assumptions in individual tests.

7. Confirm the accuracy of the model used to determine the adequacy of the electrical distribution system during variations in grid voltage (Unit 1 only)

SYSTEM INITIAL CONDITIONS AND PREREQUISITES

1. All construction tests are completed and approved for the 4160-volt ESF auxiliary power system and diesel-generator sets.

2. All instrument calibration sheets are completed and approved, and the instruments are ready for service.

3. Adequate fire protection services are available, including portable hand-operated extinguisher sets.

4. Communication systems have been established to provide proper coordination between the control room, the ESF Switchgear rooms, diesel-generator control boards and other areas where testing is required.

TABLE 14.2-6 (Cont'd)

5. 6900-, 4160-, 480-, and 120-Vac preoperational tests have been completed and approved and the equipment is ready for service.

6. 250-, 125-, and 24/48-Vdc system preoperational tests have been completed and approved, and the equipment is ready for service.

7. Standby a-c diesel-generator preoperational test PT-DG-101 completed and approved and the equipment is ready for service. This test shall have demonstrated that the diesel generators are capable of supplying full design load and maintain design specifications following full load reject.

8. Alternate power supplies are available from Unit 2 for loads which cannot be deenergized during this test (i.e., fire protection equipment and security).

9. The 345-kV yard equipment and system auxiliary transformers 142 and 242 are available for service.

10. Loads to be picked up have also been functionally tested, i.e., HPCS, LPCS, etc.

SAFETY PRECAUTIONS

1. Verify that all safety and construction "Out of Service" tags are removed from all equipment to be operated for tests.

2. Ensure that standard electrical safety precautions are observed when working on energized equipment.

3. Ensure that cognizant site personnel have been advised of this test.

4. Verify that all mechanical and electrical subsystems required for proper operation of the diesel-generator sets are operational.

5. Do not energize any electrical equipment until the protective devices associated with that piece of equipment have been checked and/or calibrated, and placed in service.

TEST PROCEDURE

1. Observe operating safety precautions for personnel and the equipment under test. (Grounds off equipment to be tested, personnel clear of equipment to be operated, proper clearances for testing obtained prior to start of testing.)

TABLE 14.2-6 (Cont'd)

2. The test shall consist of three test sections; each test section shall demonstrate the independence and redundancy of one of the three ESF Divisions (i.e., 1, 2, and 3). The initial status of a-c and d-c power systems prior to performing each test section is specified below:

   a. ESF Division 1 Test Lineup.

      (1) All Division 1 a-c switchgear energized and supplied from the Unit 1 system auxiliary transformer, TR 142.

      (2) All Division 1 d-c buses energized and connected to their respective batteries. In addition, 125-Vdc bus 111X energized and connected to 125-Vdc bus 111Y.

      (3) Those power sources necessary for the safe operation of the Unit 1 system auxiliary transformer when required shall be energized.

      (4) 4160-V SWGR 241Y energized and supplied from the Unit 2 system auxiliary transformer, TR 242.

      (5) 125-Vdc bus 211Y energized and connected to its battery.

      (6) All other Unit 1 AC and DC power distribution systems deenergized during the simultaneous simulation of a LOCA and loss of offsite power test.

   b. ESF Division 2 Test Lineup.

      (1) All Division 2 a-c switchgear energized and supplied from Unit 1 system auxiliary transformer, TR 142.

      (2) All Division 2 d-c buses energized and connected to their respective batteries. In addition, 125-Vdc bus 112X energized and connected to 125-Vdc bus 112Y.

      (3) Those power sources necessary for the safe operation of the Unit 1 system auxiliary transformer when required shall be energized.

      (4) 4160-V SWGR 242Y energized and supplied from the Unit 2 system auxiliary transformer, TR 242.

      (5) 125-Vdc bus 212Y energized and connected to its battery.

TABLE 14.2-6 (Cont'd)

(6) All other Unit 1 a-c and d-c power distribution systems deenergized during the simultaneous simulation of a LOCA and loss of offsite power test.

TABLE 14.2-6 (Cont'd)

c. ESF Division 3 Test Lineup.

(1) All Division 3 a-c switchgear energized and supplied from the Unit 1 system auxiliary transformer, TR 142.

(2) All Division 3 d-c buses energized and connected to their respective batteries.

(3) Those power sources necessary for the safe operation of the Unit 1 system auxiliary transformer when required shall be energized.

(4) All other Unit 1 a-c and d-c power distribution systems deenergized during the simulation of a LOCA and loss of offsite power.

3. As nearly as practicable, it will be demonstrated that the 4160-volt ESF system can supply expected full load from normal and alternate a-c sources.

   Automatic diesel starting sequence shall be tested for the condition of offsite power loss, with and without a simultaneous LOCA signal.

4. All ESF auxiliary power systems will be tested to demonstrate that they are capable of supplying their assigned loads.

5. Demonstrate that the automatic operation of the diesel generator for bus undervoltage, low water level in reactor vessel, and high pressure in reactor containment is in conformance with design.

6. Each ESF division test section shall demonstrate that the ESF division equipment responds in accordance with its design to the following simulated conditions:

   a. loss of offsite power,

   b. LOCA conditions with no loss of offsite power, and

   c. simultaneous LOCA conditions and loss of offsite power.

TABLE 14.2-6 (Cont'd)

ACCEPTANCE CRITERIA

1. The normal and auxiliary offsite power supplies are capable of supplying sufficient power under emergency conditions.
2. Diesel generators are capable of supplying required power to all essential loads.
3. Voltages and frequencies on the 4160-Volt ESF buses are within the design limits during and after automatic load sequencing tests.
4. Load shedding and sequencing occurs as designed and as outlined in Chapter 8.0.
5. Voltage and frequency transients and test results are within design limitations.
6. All circuit breaker interlocks and automatic operations function in accordance with design.
7. All redundant emergency ESF electrical systems function in accordance with design.
8. Voltage and current measurements confirm the calculational model used to analyze for off-normal grid voltage conditions. (unit 1 only)
9. The three ESF divisions for each unit can be operated successfully and independently of one another.