UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER AND LIGHT COMPANY

PENNSYLVANIA ELECTRIC COMPANY

DOCKET NO. 50-289

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 27
License No. DPR-50

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The applications for amendment by Metropolitan Edison Company, Jersey Central Power & Light Company, and Pennsylvania Electric Company (the licensees) dated February 18, 1977, comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the applications, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.c.(2) of Facility Operating License No. DPR-50 is hereby amended to read as follows:

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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 27 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Attachment:
Changes to the Technical Specifications

Date of Issuance: March 23, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 27

FACILITY OPERATING LICENSE NO. DPR-50

DOCKET NO. 50-289

Remove Pages	Insert Pages
3-43 & 3-44	3-43 & 3-44
4-29 & 4-30	4-29 & 4-30
4-34a & 4-34b	4-34a & 4-34b

The changed areas on the revised pages are shown by marginal lines. Pages 3-43, 4-29, and 4-34b are unchanged and are included for convenience only.

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for any reason, reactor operation is permissible for the succeeding seven days provided that during such seven days the operable diesel generator is tested immediately and daily. In the event two diesel generators are inoperable, the unit shall be placed in hot shutdown in 12 hours. If one diesel is not operable within an additional 24 hour period the plant shall be placed in cold shutdown within an additional 24 hours thereafter."

d. If one Unit Auxiliary Transformer is inoperable and a 4160 volt tie from Unit 2 transformer cannot be placed in service and a diesel generator becomes inoperable, the unit will be placed in hot shutdown within 12 hours. If one of the above sources of power is not made operable within an additional 24 hours the unit shall be placed in cold shutdown within an additional 24 hours thereafter.

e. If Unit 1 is separated from the system while carrying its own auxiliaries, or if only one 230 kv line is in service, continued reactor operation is permissible provided one emergency diesel generator shall be started and run continuously until two transmission lines are restored.

f. The engineered safeguards electrical bus, switchgear, load shedding, and automatic diesel start systems shall be operable except as provided in Specification 3.7.2c above and as required for testing.

g. One station battery may be removed from service for not more than eight hours.

Bases

The Unit Electric Power System is designed to provide a reliable source of power for balance of plant auxiliaries and a continuously available power supply for the engineered safeguards equipment. The availability of the various components of the Unit Electric Power System dictate the permissible mode of station operation.

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3.8 FUEL LOADING AND REFUELING

Applicability

Applies to fuel loading and refueling operations.

Objective

To assure that fuel loading and refueling operations are performed in a responsible manner.

Specification

3.8.1 Radiation levels in the Reactor Building refueling area shall be monitored by RM-G6 and RM-G7. Radiation levels in the spent fuel storage area shall be monitored by RM-G9. If any of these instruments become inoperable, portable survey instrumentation, having the appropriate ranges and sensitivity to fully protect individuals involved in refueling operation, shall be used until the permanent instrumentation is returned to service.

3.8.2 Core subcritical neutron flux shall be continuously monitored by at least two neutron flux monitors, each with continuous indication available, whenever core geometry is being changed. When core geometry is not being changed, at least one neutron flux monitor shall be in service.

3.8.3 At least one decay heat removal pump and cooler shall be operable.

3.8.4 During reactor vessel head removal and while loading and unloading fuel from the reactor, the boron concentration shall be maintained at not less than that required for refueling shutdown.

3.8.5 Direct communications between the control room and the refueling personnel in the Reactor Building shall exist whenever changes in core geometry are taking place.

3.8.6 During the handling of irradiated fuel in the Reactor Building at least one door on the personnel and emergency hatches shall be closed. The equipment hatch cover shall be in place with a minimum of four bolts securing the cover to the sealing surfaces.

3.8.7 During the handling of irradiated fuel in the Reactor Building, each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1. Closed by an isolation valve, blind flange or manual valve, or
2. Be capable of being closed by an operable automatic containment purge and exhaust isolation valve.

3.8.8 If any of the above specified limiting conditions for fuel loading and refueling are not met, movement of fuel into the reactor core shall cease; action shall be initiated to correct the conditions so that the specified limits are met, and no operations which may increase the reactivity of the core shall be made.

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4.4 REACTOR BUILDING

4.4.1 CONTAINMENT LEAKAGE TESTS

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Applicability

Applies to containment leakage.

Objective

To verify that leakage from the reactor building is maintained within allowable limits.

Specification

4.4.1.1 Integrated Leakage Rate Tests

4.4.1.1.1 Design Pressure Leakage Rate

The design integrated leakage rate, (L_d), from the reactor building at the 55 psig design pressure, P_d, is .1 weight percent of the building atmosphere at that pressure per 24 hours.

4.4.1.1.2 Allowable Integrated Leakage Rate

The maximum allowable integrated leakage rate, (L_a), from the reactor building at the calculated peak reactor building internal pressure of 50.6 psig (P_a) associated with the design basis accident, shall not exceed .1 weight percent of the building atmosphere at that pressure per 24 hours.

4.4.1.1.3 Testing at Reduced Pressure

The governing criteria for the periodic integrated leakage rate tests to be performed at the reduced test pressure, P_t (of not less than 27.5 psig), is the maximum allowable containment test leakage rate, L_t, which shall be determined as follows:

a. Prior to reactor operation the initial value of the integrated leakage rate of the reactor building shall be measured at design pressure and at the reduced pressure to be used in the periodic integrated leakage rate tests. The leakage rates thus measured shall be identified as L_{am} and L_{tm} respectively, and this same nomenclature shall apply to any subsequent periodic integrated leakage rate test measurements.

b. L_t shall equal $L_a\left[\frac{L_{tm}}{L_{am}}\right]$ for values of $\frac{L_{tm}}{L_{am}}$ below 0.7.

c. L_t shall equal $L_a\sqrt{\frac{P_t}{P_a}}$ for values of $\frac{L_{tm}}{L_{am}}$ above 0.7.

d. The value of L_t will be included in this specification after the initial leak rate test.

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4.4.1.1.4 Conduct of Tests

a. During the period between the initiation of the containment inspection and the performance of a periodic integrated leakage rate test, no repairs or adjustments shall be made unless the inspection reveals structural deterioration which could affect the containment structural integrity or leak-tightness. Such structural deterioration shall be corrected before performance of the test and a description of the deterioration and the corrective action taken shall be reported as part of the test report submitted in accordance with technical specification 4.4.1.1.8.

b. The containment test pressure shall be allowed to stabilize for a period of not less than four hours prior to the start of a leakage rate test.

c. The test duration shall be at least 24 hours unless experience from at least two prior tests provides evidence of the adequacy of a shorter test duration.

d. Test accuracy shall be verified by supplementary means, such as measuring the quantity of air required to return to the starting point or by imposing a known leak rate to demonstrate the validity of measurements.

e. Closure of containment isolation valves for the purpose of the test shall be accomplished by the means provided for normal operation of the valves without preliminary exercises or adjustment.

f. Portions of the following fluid systems will be drained and vented to containment atmosphere prior to and during the integrated leakage rate tests:

   1. Parts of the reactor coolant pressure boundary open directly to containment atmosphere under post accident conditions. (become an extension of containment boundary)

   2. Portions of closed systems inside containment that penetrate containment and rupture as a result of a loss of coolant accident.

   NOTE: Systems that are required to maintain the plant in a safe condition during the tests and systems that are normally filled with water and operating under post-accident conditions need not be vented. In addition, missile shielded lines outside the secondary shield will not be vented.

g. The fluid block system shall be deactivated prior to and during the integrated leakage rate tests.

h. All containment components normally pressurized by the penetration pressurization system shall be at atmospheric pressure during the integrated leakage rate tests.

4.4.1.5 Reactor Building Modifications

Any major modification or replacement of components affecting the reactor building integrity shall be followed by either an integrated leak rate test or a local leak test, as appropriate, and shall meet the acceptance criteria of 4.4.1.1.5 and 4.4.1.2.3, respectively.

Bases[1]

The reactor building is designed for an internal pressure of 55 psig and a steam-air mixture temperature of 281 F. Prior to initial operation, the containment will be strength tested at 115 percent of design pressure and leak rate tested at the design pressure. The containment will also be leak tested prior to initial operation at approximately 50 percent of the design pressure. These tests will verify that the leakage rate from reactor building pressurization satisfies the relationships given in the specifications.

The performance of periodic integrated and local leakage rate tests during the plant life provides a current assessment of potential leakage from the containment in case of an accident that would pressurize the interior of the containment. In order to provide a realistic appraisal of the integrity of the containment under accident conditions "as found" local leakage results must be documented for correction of the integrated leakage rate test results. Containment isolation valves are to be closed in the normal manner prior to local or integrated leakage rate tests.

The minimum test pressure of 27.5 psig for the periodic integrated leakage rate test is sufficiently high to provide an accurate measurement of the leakage rate and it duplicates the pre-operational leakage rate test at the reduced pressure. The specification provides a relationship for relating the measured leakage of air at the reduced pressure to the potential leakage of 55 psig. The minimum of 24 hours was specified for the integrated leakage rate test to help stabilize conditions and thus improve accuracy and to better evaluate data scatter. The frequency of the periodic integrated leakage rate test is keyed to the refueling schedule for the reactor, because these tests can best be performed during refueling shutdowns.

The specified frequency of periodic integrated leakage rate tests is based on three major considerations. First is the low probability of leaks in the liner, because of conformance of the complete containment to a 0.10 percent leakage rate at 55 psig during pre-operational testing and the absence of any significant stresses in the liner during reactor operation. Second is the more frequent testing, at design pressure, of those portions of the containment envelope that are most likely to develop leaks during reactor operation (penetrations and isolation valves which are not continuously pressurized by the penetration pressurization system or are not fluid blocked post-accident by the fluid block system) and the low value (0.06 percent) of leakage that is specified as acceptable from penetrations and isolation valves. Third is the tendon stress surveillance program which provides assurance that an important part of the structural integrity of the containment is maintained.

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More frequent testing of various penetrations is specified as these locations are more susceptible to leakage than the reactor building liner due to the mechanical closure involved. Particular attention is given to testing those penetrations and process lines not serviced by the penetration pressurization system or the fluid block system. The basis for specifying a total leakage rate of 0.06 percent from those penetrations and isolation valves is that more than one-half of the allowable integrated leakage rate will be from these sources.

Valve operability tests are specified to assure proper closure or opening of the reactor building isolation valves to provide for isolation or functioning of Engineered Safety Features systems. Valves will be stroked to the position required to fulfill their safety function unless it is established that such testing is not practical during operation. Valves that cannot be full-stroke tested will be part-stroke tested during operation and full-stroke tested during each normal refueling shutdown.

REFERENCE

(1) FSAR, Section 5.

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