SUPPLEMENT NO. 3 TO THE MARCH 3, 1978

FIRE PROTECTION SAFETY EVALUATION REPORT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

U. S. NUCLEAR REGULATORY COMMISSION

PROVISIONAL OPERATING LICENSE NO. DPR-16

JERSEY CENTRAL POWER & LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

Date: August 25, 1980

INTRODUCTION

On March 3, 1978, the Commission issued Amendment No. 29 to License No. DPR-16 for the Oyster Creek Nuclear Generating Station. The amendment added a condition to the license which required completion of the modifications identified in paragraphs 3.1.1 through 3.1.23 of the NRC's Fire Protection Safety Evaluation (FPSE) for Oyster Creek dated March 3, 1978.

By letter dated July 2, 1980, the licensee notified the NRC of a schedule slippage for the installation of the alternate water supply to the yard loop, item 3.1.20 of Table 3.1 of the FPSE. The modification was to have been completed by July 1980; the licensee has now proposed to complete this item prior to November 1, 1980. In Section 3 of the FPSE, certain items were identified as incomplete and requiring further information from the license and evaluation by the NRC staff. This supplement to the FPSE also addresses the status of those items that were identified as incomplete.

DISCUSSION

The licensee's July 2, 1980 letter stated that the schedule for the installation of the alternate water supply to the yard loop will slip because of engineering problems, manpower problems associated with the recent refueling outage and Three Mile Island lessons learned work, and the need to clean an existing tank which has not been available because of the unforseen extension of the recent refueling outage.

The licensee's submittals of April 7 (2 letters), August 1, and September 22, 1978, August 31 and December 7, 1989 address the incomplete items in Section 3 of the FPSE.

EVALUATION

The section numbers indicated are those corresponding to the section numbers in the FPSE.

3.1.20 ALTERNATE WATER SUPPLY TO THE YARD LOOP

An alternate water supply to the yard loop will be provided. Table 3.1 currently specifies that the alternate water supply would be installed by July 1980. The licensee has indicated that this schedule will slip because of engineering problems associated with the installation and manpower problems due to the recent refueling outage and Three Mile Island lessons learned work. In addition, the installation of the new water supply requires cleaning an existing tank which has not been available because of the unforeseen extension of the recent refueling outage. The licensee has now proposed completing the installation of the alternate water supply prior to November 1, 1980.

All other fire protection modifications listed on Table 3.1 of the FPSE with the exception of the remote shutdown station have been completed including fire pump house fire protection. As discussed in Supplement No. 2 to the FPSE, fire protection at the Oyster Creek Station has been significantly upgraded including augmentation of the shift crew to include adequate personnel to manually shutdown the plant and also respond to any fire emergency. Ten individuals are assigned to

each shift, five of whom are designated to shutdown the plant remotely, if necessary, and five who are designated to respond to any fire which may occur. All personnel assigned responsibility to respond to a fire have been appropriately trained in fire fighting techniques and participate in periodic fire drills.

We have concluded that the licensee has made a conscientious effort to fulfill his commitments and that the extension of the schedule such that the alternate water supply modifications will be complete prior to November 1, 1980 is acceptable.

3.2.1 ADMINISTRATIVE CONTROLS

GENERAL

The administrative controls for fire protection consist of the fire protection organization, the fire brigade's training, the controls over combustibles and ignition sources, the prefire plans and procedures for fighting fires, and the quality assurance provisions for fire protection. By letter dated April 7, 1978, the licensee provided a description of the elements of his administrative controls for fire protection to demonstrate conformance to staff guidelines contained in "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance." This description was supplemented by letter of September 22, 1978.

Organization

The licensee's fire protection organization description contains the functional responsibilities and the lines of communication between all positions involved in the fire protection program.

The fire protection organization description identifies the management and staff positions responsible for formulation, implementation, and assessment of the fire protection program. The organizational responsibilities are delineated for design, selection, installation, testing, maintenance, modification, and review of fire protection systems and for fire brigade training. Qualification requirements have been established for the training instructors, and the positions responsible for formulating and implementing the fire protection program.

We find that the fire protection organization satisfies the staff guidelines identified above and is, therefore, acceptable.

Fire Brigade Training

The fire brigade training program consists of classroom instructions, fire drills, and practice in fire fighting. The fire brigade training program contains the following essential elements: use of fire fighting equipment, fire fighting principles and techniques, use of fire fighting procedures, periodic practices in actual fire fighting, and periodic fire drills to assess brigade effectiveness. These drills also provide practice in the use of equipment, fire fighting procedures, and brigade leadership. Records of fire brigade members' training and drills are maintained and available for review.

We find that the fire brigade training program satisfies the staff guidelines identified above and is, therefore, acceptable.

Control of Combustibles

The licensee has identified the measures established to minimize the amount of combustibles that a safety-related area may be exposed to. These include provisions to: limit the use and storage of combustibles in safety-related areas; establish work controls and required additional fire protection where transient fire loads are introduced; assure the removal of waste, debris and scrap materials following work activities; and provide for periodic housekeeping inspections.

We find that the control of combustibles satisfies the staff guidelines identified above and is, therefore, acceptable.

Control of Ignition Sources

The control of ignition sources minimizes the potential for fire resulting from work involving ignition sources such as welding, cutting, grinding, and open flame work or smoking. The controls on ignition sources to be established by the licensee require: use of a work permit authorized by a qualified individual prior to performing cutting, welding, grinding, or other flame work; removal of moveable combustible material; use of trained and equipped fire watches; provisions for protection by curtains or covers when performing cutting, welding, grinding, or other flame work; and restrictions on smoking in safety-related areas. Use of open flames or combustion generated smoke for leak detection in safety related areas is prohibited.

Subject to implementation of procedures to control ignition sources, we find that the control of ignition sources satisfies the staff guidelines identified above and is, therefore, acceptable.

Fire Fighting Procedures

The licensee has provided a description of the current fire fighting procedures and the procedural elements to be changed in the near future. The fire fighting procedures identify the actions to be taken by the individual discovering the fire, action to be taken by the control room operators, the fire brigade actions, and the necessary strategies. These fire fighting strategies will be developed following completion of the detection and alarm system design.

Subject to implementation of these changes to fire fighting procedures, we find that the fire fighting procedures satisfy the staff guidelines identified above and are, therefore, acceptable.

Quality Assurance

The licensee has elected to meet NRC's fire protection QA criteria by applying their existing QA program under 10 CFR Part 50, Appendix B, to fire protection with certain exceptions. We have reviewed these

exceptions and find that these satisfy the intent of our guidelines identified above. This QA program should adequately cover the quality assurance provisions for fire protection in safety-related areas such as the control of the design, procurement, installation, testing and maintenance of fire protection equipment.

We find that the licensee's commitment to apply the existing QA program under 10 CFR Part 50, Appendix B, to fire protection activities as noted above, satisfies the staff guidelines identified above and is, therefore, acceptable.

3.2.2 RADWASTE FIRES

Our FPSE noted that the potential for release of radioactive material due to fires in radwaste areas should be evaluated. By letters of April 7, 1978 and August 31, 1979, the licensee provided the results of an evaluation of fire protection for radioactive waste facilities, including the potential for a fire to cause a release of radioactive material. The following summarizes the results of this evaluation:

(1) Existing radioactive waste facility - The building is separated from other areas by at least 3-hour rated barriers and most radioactive material is contained in tanks and demineralizers which are enclosed in at least 3-hour fire rated vaults. The only area where a fire could cause release of radioactive material is the waste storage area, where some contaminated combustible material is accumulated prior to being compacted in steel storage containers. The licensee has indicated that since this material is low level and of small quantity, and the airborne particulates would be removed by ventilation filters, the resulting offsite dose levels would be insignificant. The licensee's evaluation indicated that barrels of waste are sealed in steel drums in the old radwaste facility; however, a maximum of five barrels of compactable waste could be burned that are not sealed. Release of radioactive material would conservatively result in an activity of less than .13 curies (Ci). The ventilation filters for this area would contain most of the radioactive material; however, even if all of the material were released out of the plant, resulting doses would be well within 10 CFR Part 100 limits. We have discussed this analysis with the licensee and agree with his conclusions.

(2) Augmented off-gas facility - Licensee analyses have demonstrated that release to the environment of all contained radioactivity in the facility, with the exception of that contained in charcoal filter beds, would result in offsite doses that are well within 10 CFR Part 100 limits. The charcoal filters are contained in steel cylinders and thus not likely to be ignited by an exposure fire. The effect of release of contained radioactive material in off-gas charcoal filters, whether due to a fire or other causes, is being reviewed in a separate generic task.

(3) New solid liquid radwaste facility - All high level waste is contained in tanks enclosed in vaults that are at least 3-hour fire rated. The facility contains only minimal combustibles, and therefore, fires that could occur would not damage the tanks or cause release of radioactive material.

Despite the above evaluation, fire protection will be provided to assure prompt detection and suppression of fires that may occur. This will include fire detection devices that alarm locally and in the control room, portable fire extinguishers, and hose houses with yard hydrants. Based on the above we find that fire protection for radwaste facilities satisfies the objectives of Section 2.0 of our FPSE and is, therefore, acceptable.

3.2.3 FIRE BARRIER PENETRATIONS

Our FPSE noted that the licensee had proposed to upgrade a limited number of fire barrier penetrations, but had provided no justification for those which were not to be upgraded. Our FPSE noted that the staff had taken the position that all door, ventilation duct, hatchway, electrical cable, conduit, and piping penetrations be upgraded to a rating equivalent to that required of the fire barrier. In most instances this would need to be a 3-hour fire rated barrier unless it was demonstrated that a lower rating was adequate. By letter of August 1, 1978, the licensee provided the results of an evaluation of all such penetrations through fire barriers. This evaluation showed that in nearly all cases, the penetrations will be upgraded to a 3-hour fire rating, as recommended by BTP 9.5-1. Penetrations that will not be protected to a 3-hour fire rating and the basis therefore have been reviewed by the staff and are found acceptable.

The electrical cable penetration fire stops are being upgraded using a silicone foam material that has been tested to demonstrate its ability to withstand a 3-hour exposure fire. The adequacy of this firestop design was addressed in our FPSE.

Based on the above we find that penetrations through fire barriers will be adequately protected to limit the spread of fire between areas and satisfy the objectives of Section 2.0 of our FPSE. Accordingly we find the protection provided such penetration is acceptable.

3.2.4 COMMUNICATIONS EQUIPMENT

Our FPSE noted that fixed in-plant communications systems were not installed to any separation criteria and thus were susceptible to simultaneous loss in a fire. To provide communications capability for fire fighting and plant shutdown activities, the portable communications system would have to be relied on. The licensee had proposed to evaluate the adequacy of the existing portable communications system to provide communications between plant areas. By letter dated April 7, 1978 the licensee indicated that tests showed communications between the control room and certain areas in the reactor building and turbine building was not possible using the portable communication equipment. To assure that adequate communications capability will be available for fire fighting and safe shutdown activities, the licensee has proposed to install fixed repeaters for these areas, compatible with the existing portable communications equipment. The repeater system will be tested to assure its compatibility with safety system instrumentation. Subject to implementation of this modification, we find the communications system satisfies the objectives of Section 2.0 of our FPSE and is, therefore, acceptable.

3.2.5 FIRE HAZARDS ANALYSIS

Our FPSE notes that the licensee would provide an update of the fire hazards analysis after the completion of all modifications. All modifications with the exception of the alternate shutdown system will be completed prior to November 1, 1980, and a fire hazards analysis update may be submitted at that time. However, final evaluation of the fire hazards analysis cannot be made until design and location of equipment and cabling for the alternate shutdown system have been finalized. The Commission's Memorandum and Order dated May 23, 1980 notes that the proposed Appendix R specifies December 1, 1981 as the proposed implementation date for alternate shutdown capability and October 1, 1982 for dedicated shutdown capability for plants, including Oyster Creek, that are under review in the Systematic Evaluation Program. Our review of the Fire Hazards Analysis will be deferred until the design of the alternate shutdown system is finalized.

CONCLUSION

Because of the fire protection modifications that have been implemented, the augmented shift size, and the appropriate training of those personnel assigned to respond to a fire, we conclude that the three month deferral for the completion of the alternate water supply to the yard loop is acceptable. We further conclude that this deferral will not result in an unacceptable risk to the health and safety of the public and it does change conclusions made in the FPSE dated March 3, 1978; therefore, Table 3.1 is modified by this Supplement as indicated.

We also conclude that the incomplete items in the FPSE have been acceptably resolved subject to the implementation of the remaining proposed modifications shown on Table 3.1 of the enclosure and with the exception of Item 3.2.5, Fire Hazards Analysis, which will be addressed in a further supplement following the completions of the remote shutdown system.

Attached:
Table 3.1

TABLE 3.1*

IMPLEMENTATION DATES FOR LICENSEE PROPOSED MODIFICATIONS

Item		Date
3.1.1	Fire Barriers	Completed
3.1.2	Fire Barrier Penetrations	Completed
3.1.3	Dampers	Completed
3.1.4	Fire Detectors	Completed
3.1.5	Halon Suppression Systems	Completed
3.1.6	Water Spray System	Completed
3.1.7	Sprinkler Systems	Completed
3.1.8	Carbon Dioxide Sunpression System	Completed
3.1.9	Hose Stations	Completed
3.1.10	Aqueous Film Forming Foam	Completed
3.1.11	Portable Extinguishers	Completed
3.1.12	Emergency Breathing Apparatus	Completed
3.1.13	Removal of Combustible Material	Completed
3.1.14	Transformer Dike	Completed
3.1.15	Diesel Generator Fuel Oil Line	Completed
3.1.16	Ventilation System Changes	Completed
3.1.17	Loss of Ventilation Alarm-Battery Room	Completed
3.1.18	Suppression System Valve Control	Completed
3.1.19	Portable Smoke Removal Equipment	Completed
3.1.20	Alternate Water Supply to the Yard Loop	Prior to November 1, 1980
3.1.21	Protection From Water Damage	Completed
3.1.22	New Battery Room and Rerouting Battery Cables	Completed
3.1.23	Remote Shutdown Station	**

*Issued by Supplement No. 3 to the March 3, 1978 Fire Protection SER.

**Supplement No. 2 to our Fire Protection SER dated November 13, 1979 indicated that our review of the Remote Shutdown Station would be based on Systematic Evaluation Program (SEP) review and schedule requirements; however, the Commission's Memorandum and Order dated May 23, 1980 notes that the proposed Appendix R specifies December 1, 1981 as the proposed implementation date for alternate shutdown capability and October 1, 1982 for dedicated shutdown capability for plants, including Oyster Creek, that are under review in the SEP.