U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 84-35

Docket No. 50-293

License No. DPR-35 Priority - Category C

Licensee: Boston Edison-Company M/C Nuclear

Facility Name: Pilgrim Generating Station

Inspection At: Plymouth, MA

Inspection Conducted: November 7-9, 1984

Inspectors: Craig Z. Gordon 3-21-85
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Inspection Summary:

Inspection on November 7-9, 1984, Report No. 50-293/84-35

Areas Inspected: Special announced emergency preparedness inspection and observation of the licensee's remedial drill performed on November 8, 1984. The inspection involved 88 inspector-hours by a team of five NRC Region I and NRC contractor personnel.

Results: The licensee's emergency response actions for the previous full-scale exercise were adequate to provide protective measures for the health and safety of the public, but a remedial drill was necessary in order to retest certain deficiencies. Improvements in the areas of emergency classification, notifications, dose assessment, and decision-making were observed during the remedial drill.

DETAILS

1. Persons Contacted

The following licensee representatives attended the exit meeting on November 9, 1984:

R. F. Cook, Nuclear Testing Department
J. F. Crowder, Sr. Compliance Engineer
E. T. Graham, Compliance Group Leader
W. R. Hoey, ERHS Group Leader
R. J. Kennedy, NMSD-Sr. Staff Engineer
J. D. Keyes, Regulatory Affairs and Programs Group Lender
B. P. Lunn, ERHS, Sr. Engineer
C. J. Mathis, Nuclear Operations Manager
A. V. Morisi, NMSD Manager
B. V. Nolan, Emergency Preparedness Coordinator
A. L. Oxsen, VP, Nuclear Operations
A. R. Trudeau, Chief, Radiol. Engineer
E. J. Ziemianski, Nuclear Operations Support Manager

The team observed several of the above licensee emergency response personnel, controllers, and evaluations as they performed their assigned functions.

2. Emergency Exercise

The Pilgrim Generating Station's remedial drill was conducted on November 8, 1984 from 10:00 a.m. until 4:15 p.m. The purpose of the remedial drill was to retest and demonstrate emergency response actions in the following areas:

- Recognition of emergency initiating events
- Escalation and classification of emergency conditions in relation to Emergency Action Levels.
- Timely notifications to offsite authorities
- Calculation and estimation of projected doses and dose rates
- Determination and coordination of decision-making process for protective measures

3. Pre-Exercise Activities

On October 15, 1984, NRC Region I representatives met with licensee personnel to review and discuss the scope and content of the exercise scenario. The scenario package was upgraded over the previous one through use of specific controller messages and additional information concerning expected personnel actions in the Control Room (CR) and Emergency Operations Facility (EOF). Presentation of data was clarified with respect to operational assessment, dose assessment, environmental monitoring,

description of plume direction, meteorological parameters, dose projections, and protective action recommendations to offsite authorities. NRC observers attended a licensee briefing for licensee controllers on November 7, 1984 and participated in the discussion of emergency response actions expected during each scenario phase. The licensee stated that the remedial drill scenario was divided into two parts and would cause activation of their on-site emergency organization, Control Room, and EOF. The event initiated in the CR and progressed to the Unusual Event, Alert, and Site Area emergency classifications. This was followed by the EOF portion which was characterized by degraded plant conditions leading to a General Emergency.

4. Exercise Observation

During the conduct of the exercise, NRC team members made detailed observations of the activation and augmentation of the emergency organization, activation of the Control Room and Emergency Operations Facility, and actions of emergency response personnel during the operation of facilities. The following activities were observed:

- Detection, classification, and assessment of the scenario events;
- Direction and coordination of the emergency response;
- Notification of licensee personnel and offsite agencies of pertinent information;
- Communications/information flow, and record keeping;
- Assessment and projection of radiological dose and consideration of protective actions;
- Performance of offsite and in-plant radiological surveys; and
- Performance of technical support.

The NRC team noted that the licensee's activation and augmentation of the emergency organization, activation of the emergency response facilities, and actions and use of the facilities were generally consistent with their emergency response plan and implementing procedures. The team also noted improvements in the following areas previously identified for licensee corrective action:

- Provide written messages for controllers to use regarding plant conditions rather than verbal messages which creates discussion between players and controllers.

Written messages were provided for controller use and contained information about plant status, parameters, and meteorological conditions.

- Personnel briefings were not conducted by either the Emergency Director or his alternate in the EOF regarding plant status, radiological conditions, and protective action recommendations.

  During the EOF phase, the Emergency Director was observed providing periodic briefings to EOF personnel at changes in emergency classification and when recommendations for protective measures were made.

- Status boards were neither adequate nor maintained in the EOF to provide current (and accurate) emergency conditions and radiological information.

  A new status board has been developed and placed in the EOF to provide information on emergency conditions and critical plant parameters; information was accurately maintained as the exercise progressed.

- Offsite monitoring team transmissions did not include open window radiation measurements for comparison with closed window measurements.

  Plume tracking and radiation surveys taken by offsite monitoring teams and reported to the EOF included both open and closed window readings.

- Emergency response facilities and offsite monitoring teams were not provided with information made available to the public regarding the class of emergency.

  Improvements in information flow between the EOF communicator and offsite field teams were observed specifically with regard to keeping teams apprised of changing plant conditions and plant status.

- Declaration of the site area emergency was not made until approximately one hour after effluent data was received.

  Detection, classification, and declaration of the site area emergency was accurately made in accordance with established emergency action levels. However, some delay occurred during declaration of the alert classification in that control room staff did not immediately recognize a leakage rate of 73 gpm into the drywell (thus exceeding the 50 gpm criteria for an alert condition).

- Although control room personnel were observing a continuous rise in reactor building dose rates, the decision for evacuation did not occur until dose rates were greater than 300 mR/hr.

  The decision by the Emergency Director for evacuation of Control Room personnel was found to be accurately made. The decision was based upon a steady increase in reactor building dose rates.

- For approximately one hour, the Watch Engineer was not aware that the station manager had relieved him of the Emergency Director position.

  Since the scenario was performed in separate phases, no relief of personnel or shift change was demonstrated as specified by emergency procedure. Direction and control appeared adequate, i.e., provided by one source, during the control room (Watch Engineer) and EOF (Emergency Director) portions of the drill.

- Control room communicators did not appear familiar with use of radio equipment for contacting the State Police and Coast Guard and required unnecessary guidance from the Operations Supervisor.

  The Control Room communicator acted independently to make appropriate notifications to offsite authorities following declaration of each emergency classification.

- The TSC supervisor indicated to the Watch Engineer that the TSC was fully activated before several essential technical support personnel (reactor engineer, chemistry engineer, electrical engineer, health physics engineer, administrative assistant) had arrived.

  The above comment was not designated as an exercise objective for the remedial drill, but will receive further attention during the next full scale annual exercise.

- TSC radiation levels and airborne activity levels were not monitored in the TSC until one hour after a reading of 10,000 cps was reported on the vent monitor.

  The above comment was not designated as an exercise objective for the remedial drill, but will receive further attention during the next full scale exercise.

- The need to perform initial dose calculations was neither recognized nor performed in a timely manner, i.e., after iodines had been released through the reactor building vent.

  Radiological dose assessment was performed in the Control Room by the Shift Technical Advisor (STA) and in the EOF by the Radiation Emergency Team Coordinator's staff. Calculations in each facility were performed on the HP-85 computer. As core degradation increased results were determined then reported to the Emergency Director in a timely manner.

- The Emergency Director did not recognize the need to dispatch offsite radiological monitoring teams following the radioactive release.

Once the potential for core uncovery was considered, offsite field teams were promptly assembled and dispatched to locations where the radioactive release was expected.

- An official control room log was not initially provided and maintained in adequate detail to allow reconstruction of events after they occurred.

  The above comment was not designated as an exercise objective for the remedial drill, but will receive further attention during the next full scale exercise.

- The health physics and chemistry technicians dispatched to obtain a main stack sample did not follow the step-off pad procedure upon leaving the building.

  The above comment was not designated as an exercise objective for the remedial drill, but will receive further attention during the next full site exercise.

- The OSC was supplied with "information only" copies of piping and instrument drawings (P&ID) instead of controlled copies. Information and procedures which are not current or are unapproved could impact on an actual incident were it to occur.

  The above comment was not designated as an exercise objective for the remedial drill, but will receive further attention during the next full scale exercise.

- A premature decision was made by the lead controller to intervene and discontinue the investigation of an inoperable sample pump report in that sufficient time was not left to the players to evaluate data transmissions.

  The above comment was not designated as an exercise objective for the remedial drill, but will receive further attention during the next full scale exercise.

- The logistical adequacy of the new Operations Support Center as indicated in the exercise objectives was not demonstrated.

  The above comment was not designated as an exercise objective for the remedial drill, but will receive further attention during the next full scale exercise.

- An offsite team did not pursue the opportunity to find the plume centerline.

Upon receiving instructions from the EOF, offsite monitoring teams were dispatched and actively sought both the plume boundary and plume centerline.

- Personnel responsible for maintaining EOF status boards provided information that was observed to be incorrect, incomplete, misleading, and delayed.

  A new status board was available in the EOF which displays pertinent information relative to plant conditions and a designated representative provided periodic updates on plant status and parameters.

- Direction and control provided by the Emergency Director in the EOF was lacking; protective action recommendations to the State were not made until prompted by MPHD officials.

  Discussions were observed between State and licensee representatives regarding recommended actions offsite. The Emergency Director, although not strategically located in the center of the EOF, provided acceptable EOF direction.

5. The NRC team findings which remain in areas for licensee improvement are as follows:

   - The EOF is inefficient in fulfilling its function. Space limitations, unsatisfactory habitability conditions, excessive noise, location of NRC and State areas and equipment, inhibited access to key licensee personnel, high temperatures, crowding are examples of facility deficiencies. (50-293/84-35-01)

     The existing emergency operations facility was used for the remedial drill. Only minor changes were made to it. The licensee has actively pursued arrangements for a new emergency operations facility located offsite. These arrangements need to be completed in order to eliminate the problems which exist with the current facility.

   - No formal system of record keeping or facsimile capability to provide protective action recommendations, data transmission, plant parameters to appropriate emergency centers (Control Room, TSC, OSC, Recovery Center) was found in the EOF. (50-293/84-35-02)

     Information pertaining to plant status, emergency classification, and protective measures provided to State personnel are now documented in the EOF. Although facsimile capability is available for transmission of information to the news center, this capability was not found between on site emergency response facilities.

   - Containment high radiation monitors were not operable; one monitor is known to be inoperable since January 1983. (50-293/84-35-03)

Although a committment was made by licensee personnel prior to the drill to ensure operability of containment high radiation monitors, no change in status was found.

- Revise procedures covering transmission of information to offsite field teams in order to provide for improved information flow. (50-293/84-25-04)

  Improvements were observed in the communications between the field team group leader, radiological communicator, and offsite field teams for the purpose of keeping the field teams apprised of current EOF information and existing plant conditions. However, it appears that information flow is inhibited to some degree since instructions to offsite team members are not passed directly from the field team group leader.

- The internal organization of the EOF is not conducive for optimum information flow. (50-293/84-35-05)

  The fragmented layout of the emergency operations facility, i.e., a series of trailers, restricts emergency personnel from efficiently communicating information. Some improvements in information flow were observed.

- Analysis and evaluation of radiological data should be discussed among key EOF staff members prior to relating recommendations for protective measures to the State. (50-293/84-35-06)

  Dose assessment data and information was again found to follow a direct "production-line" pathway from radiological assessment personnel to the Emergency Director. At times data was provided to the Radiological Emergency Team Coordinator and Emergency Director in the presence of State personnel prior to receiving an independent evaluation.

  The NRC team attended the licensee's post-exercise critique during which key license controllers discussed their observations of the exercise. The critique appeared adequate in that licensee controllers and participants highlighted specific areas for improvement. Licensee management indicated these recommendations would be evaluated and appropriate action taken.

6. Exit Meeting and NRC Critique

Following the licensee's self-critique, the NRC team met with the licensee representatives listed in Section 1. The team leader summarized the observations made during the exercise and discussed the areas described in Section 2.

The licensee was informed that no violations were observed and that improvements were made in several areas. The NRC team determined that within the scope and limitations of the scenario, the licensee's performance demonstrated that they could implement their Emergency Plan and Emergency Plan Implementing Procedures in a manner which would adequately provide protective measures for the health and safety of the public.

At no time during this inspection did the inspectors provide any written information to the licensee.