

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-029/89-21

Docket No. 50-029

License No. DPR-3

Licensee: Yankee Atomic Electric Company  
580 Main Street  
Builton, Massachusetts 01740-1398

Facility Name: Yankee Nuclear Power Station

Inspection At: Rowe, Massachusetts

Inspection Conducted: November 27-29, 1989

Inspectors:

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12/20/89  
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12/21/89  
date

Inspection Summary: Inspection on November 27-29, 1989 (Inspection Report  
No. 50-029/89-21)

Areas Inspected: Routine, announced emergency preparedness inspection and observation of the licensee's annual emergency exercise on November 28, 1989. The inspection was performed by a team of four NRC Region I personnel. The Commonwealth of Massachusetts and the State of Vermont participated to a limited degree. NRC Region I participated to a limited degree from the Incident Response Center in King of Prussia, PA. The Federal Emergency Management Agency (FEMA) did not observe the exercise.

Results: No violations or deviations were identified. A recurring exercise weakness was identified with regard to Emergency Response Facility communications. This Inspector Follow-up Item (50-029/88-08-01) is being upgraded to an Unresolved Item. Licensee emergency response actions were adequate to provide protective measures for the health and safety of the public.

## DETAILS

### 1.0 Persons Contacted

#### Yankee Atomic Electric Company

G. Babineau, Radiation Protection Manager  
J. Baupre, Nuclear Engineer/Shift Technical Advisor  
M. Gilmore, Technical Services Engineer  
J. Hawxhurst, Emergency Planning Group, Yankee Nuclear Services Division (YNSD)  
T. Henderson, Acting Plant Superintendent  
K. Jackson, Emergency Planning Group, YNSD  
J. Kay, Technical Services Manager  
R. Marcello, Manager, Emergency Planning Group, YNSD  
D. Marsh, Security Administrator  
J. McDowell, Supervisory Control Room Operator  
R. Mellor, Technical Director  
J. Robinson, Director, Environmental Engineering, YNSD  
E. Salomon, Emergency Planning Group, YNSD  
S. Schultz, Vice President, Engineering Services, YNSD  
N. St. Laurent, Acting Manager of Operations  
A. Tatro, Emergency Preparedness Coordinator

These individuals attended the exit meeting on November 29, 1989. The inspectors also observed the actions of, and interviewed other licensee personnel.

### 2.0 Licensee Action on Previously Identified Inspection Findings

Based on discussions with licensee representatives, observations of the exercise, and review of records, the following items which were identified during the previous exercise (Inspection Report 50-029/88-08) are updated as follows.

- (Open) Unresolved Item 50-029/88-08-01 - Poor communications within and among the Emergency Response Facilities.

The NRC team observed communications problems similar to those identified during the previous exercise. This recurring problem is discussed in detail in Section 5.0 of this inspection report. This item, which was originally identified as an Inspector Follow-up Item, will remain open and is being upgraded to an Unresolved Item.

- (Closed) Inspector Follow-up Item 50-029/88-08-02 - Recovery Manager used notification forms that were not in the official Emergency Operations Facility (EOF) operations procedure.

Appropriate notification forms have been incorporated into the EOF operations procedure. This item is closed.

### 3.0 Emergency Exercise

The Yankee Rowe partial-participation exercise was conducted on November

28, 1989 from 9:00 A.M. to 1:30 P.M. The Commonwealth of Massachusetts and the State of Vermont participated to a limited degree. NRC Region I participated to a limited degree from the Incident Response Center in King of Prussia, PA. The Federal Emergency Management Agency did not observe the exercise.

### 3.1 Pre-Exercise Activities

Prior to the emergency exercise, NRC Region I had telephone conversations with the licensee to discuss the objectives, scope and content of the exercise scenario. Certain portions of the scenario were revised by the licensee as a result of these discussions to ensure that all exercise objectives would be met.

NRC exercise observers attended a licensee briefing on November 29, 1989 and participated in discussions of emergency response actions anticipated during the exercise. The licensee stated that certain emergency response activities would be simulated and that controllers would intercede in exercise activities to prevent deviations from the scenario and to ensure that normal plant operations were not disrupted.

### 3.2 Exercise Scenario

The exercise scenario included the following events:

1. An increasing Steam Generator Tube Leak resulting in a reactor shutdown required by Technical Specifications;
2. A loss of offsite power causing the reactor to scram and the loss of two of the four reactor coolant pumps; and
3. Radioactive releases to the environment via the periodic opening and closure of the Emergency Atmospheric Dump Valves to reduce system pressure.

### 3.3 Activities Observed

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

1. Detection, classification, and assessment of scenario events;
2. Direction and coordination of the emergency response;
3. Augmentation of the emergency organization and response facility activation;

4. Notification of licensee personnel and offsite agencies of pertinent plant status information;
5. Communications, information flow, and record keeping;
6. Assessment and projection of offsite radiological dose, consideration of protective actions, and recommendation of protective actions to state officials;
7. Provisions for in-plant radiation protection;
8. Performance of offsite and in-plant radiological surveys;
9. Maintenance of site security and access control;
10. Performance of technical support, repairs and corrective actions;
11. Assembly, accountability and evacuation of personnel;
12. Preparation of press releases; and
13. Critique of the exercise.

#### 4.0 Classification of Exercise Findings

Emergency Preparedness findings are classified as follows:

##### Exercise Strengths

Exercise strengths are actions taken by the licensee's emergency response organization which provide strong positive indication of their ability to cope with abnormal plant conditions and effectively implement the Emergency Plan.

##### Exercise Weaknesses

An exercise weakness is a finding that the licensee's demonstrated level of performance could have precluded effective implementation of the Emergency Plan in the event of an actual emergency in the area being observed. The existence of an exercise weakness does not, of itself, indicate that overall response was inadequate to protect the health and safety of the public.

##### Areas for Improvement

An area for improvement is a finding which does not have a significant negative impact on the ability of the licensee to implement the Emergency Plan. Although the emergency response related to a noted area for improvement is adequate, the licensee should still evaluate the finding to determine if corrective action could be taken to improve

performance.

## 5.0 Exercise Observations

The inspectors observed the licensee's emergency response actions during the exercise as noted below for each emergency response facility. The NRC team noted that the licensee's activation and augmentation of the emergency organization, activation of the emergency response facilities, and use of the facilities were generally consistent with the Yankee Rowe emergency response plan and implementing procedures. However, an overall exercise weakness was identified with regard to communications within and among the Emergency Response Facilities. This issue is discussed in detail following the facility-specific observations.

### Control Room

The following exercise strengths were identified.

1. The Shift Supervisor/Plant Emergency Director demonstrated good command and control.
2. Event classification was appropriate and notifications were timely.
3. The Control Room emergency response staff demonstrated good use of Emergency Operating Procedures and Emergency Plan Implementing Procedures.
4. Interim dose assessment was appropriately performed by the Shift Technical Advisor who also performed an effective turnover of the dose assessment effort to radiological assessment personnel in the Technical Support Center.

No exercise weaknesses were identified.

The following areas for improvement were identified:

1. On several occasions, the Shift Supervisor/Plant Emergency Director left the Control Room area for discussions in the Technical Support Center. Turnover of authority in his absence was not apparent.
2. Some emergency response personnel in the Control Room, Technical Support Center and the Operations Support Center did not receive emergency dosimetry.
3. After initial declaration, the Shift Supervisor/Plant Emergency Director changed the Emergency Action Level upon which the Unusual Event classification was based but did not notify the offsite agencies of the change.

### Technical Support Center

The following exercise strength was identified:

1. There was a good interface between Technical Support Center personnel and NRC Region I participants at the Incident Response Center.

No exercise weaknesses were identified.

No areas for improvement were identified.

#### Operations Support Center

The performance of Operations Support Center emergency response personnel during the exercise was adequate. No facility-specific exercise strengths were noted.

No exercise weaknesses were identified.

The following area for improvement was identified:

1. The record keeping of Operations Support Center repair team efforts is not formalized. The documentation of Operations Support Center team tasks, personnel, task start time, task completion time, and results should be formalized and appropriately addressed in the Emergency Plan Implementing Procedures.

#### Emergency Operations Facility

The following exercise strengths were identified:

1. Event classification was appropriate and notifications were timely.
2. Radiological dose assessment was performed effectively.
3. Press releases were well written.

No exercise weaknesses were identified.

No areas for improvement were identified.

#### Exercise Weakness

Communications both within and among the Emergency Response Facilities were weak. This exercise weakness was indicative of similar communications problems which were observed during the 1988 Yankee Rowe emergency exercise. As such, the Inspector Follow-up Item under which this concern was originally identified (50-029/88-08-01) is being upgraded to an Unresolved Item. The following observations are noted

which demonstrate the recurring weakness.

1. Offsite agencies were not notified of a change in the classification basis for the Unusual Event classification. Also, the basis of declaration (Emergency Action Level) was apparently not transmitted to the Emergency Operations Facility (EOF) as EOF management indicated in facility briefings that the basis for the Unusual Event was an Emergency Action Level different from both the initial and the modified event classification basis determined by Control Room personnel.
2. It was difficult to determine current plant status at the Emergency Response Facilities other than the Control Room. The plant status information which was transmitted periodically over the four-way Emergency Response Facility telephone link was not formal and was inconsistent in the amount and type of information presented. Some of the data which was transmitted over the four-way phone link was transferred to an event chronology sheet which was posted in the Emergency Operations Facility. It was difficult however, to assess current plant status without reading the event chronology sheet from beginning to end. The licensee should consider the formalization of the method by which plant status information is recorded, transmitted to, and displayed at the Emergency Response Facilities. This effort should include the establishment of a specified set of plant parameters and equipment operating status indications, in addition to the chronological recording of major plant activities.
3. Placement of information on status boards in the Emergency Operations Facility and the Technical Support Center was consistently 30 minutes to 1 hour behind the current time.
4. A small radioactive puff release occurred early in the exercise when the steam generators were not initially isolated after the steam generator tube rupture was discovered. Radiological assessment personnel in the Emergency Operations Facility were the first to be aware of this release (via field monitoring data results) since exercise controllers did not tell Control Room personnel that, in accordance with the exercise scenario, the steam generators had not been initially isolated. It was not apparent during the exercise that Technical Support Center and Operations Support Center were aware of this release, i.e., the information did not flow back to these onsite facilities from the Emergency Operations Facility.
5. There were communications problems between licensee emergency response personnel in the Emergency Operations Facility and the state representatives who participated in the exercise.
  - a. For approximately 45 minutes while the EOF was staffing up, there were no announcements made with regard to the status of the emergency response effort. State representatives had

to request this information.

- b. At one point during the exercise, the licensee cycled the Power Operated Relief Valves (PORVs) to help reduce reactor coolant system pressure. This information was not provided to the state representatives in the Emergency Operations Facility for over one hour after it was done. Explanation of the reasoning for this activity should have been provided to the state representatives prior to or shortly after it had been done.
  - c. Offsite authorities took conservative Protective Actions even though plant status and offsite radiological conditions were never indicative of an event classification more serious than a Site Area Emergency. The states may have been persuaded to take these Protective Actions by statements made during facility briefings in the Emergency Operations Facility by licensee management with regard to equipment failure scenarios which could further degrade plant conditions, i.e., what equipment would have to fail in order for that plant to enter a General Emergency condition. Although anticipatory thinking is not discouraged, the licensee should clearly discuss the possibility and probability of these equipment failure scenarios actually taking place as they relate to current plant conditions.
6. No input was requested from site emergency response personnel during the recovery discussion which followed the exercise. Also, a part of the recovery discussion dealt with the assessment of fuel failure which had occurred during the exercise. It was not apparent that Emergency Operations Facility personnel were knowledgeable of this suspected fuel failure prior to the recovery discussion nor was it obvious that emergency response personnel in the onsite Emergency Response Facilities were ever aware of it.

#### 6.0 Licensee Critique

The NRC exercise observation team attended the licensee's post-exercise critique on November 29, 1989 at which the licensee's observations of the exercise were discussed. The Manager, Emergency Planning Group, YNSD indicated that the observations would be evaluated and appropriate corrective actions taken. The critique was adequate.

#### 7.0 Exit Meeting and NRC Critique

The NRC team leader met with the licensee representatives listed in Section 1 of this report at the end of the inspection. The team leader summarized the observations made during the exercise.

The licensee was informed that several previously identified items had been addressed and that no violations or deviations were observed. Notwithstanding the weakness identified with regard to communications

within and among the Emergency Response Facilities, 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 could adequately provide protective measures for the health and safety of the public. However, the NRC team leader emphasized to the licensee that the identified weakness was indicative of communications problems identified during the previous exercise and that efforts should be taken to resolve this recurring issue.

Licensee management acknowledged the findings and indicated that they would evaluate the NRC comments and observations and take corrective actions as appropriate, with special attention to be given to resolving the exercise weakness.