

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-029/90-24

Docket No. 50-029


License No. DPR-3

Licensee: Yankee Atomic Electric Company
580 Main Street
Bolton, MA 01740-1398

Inspection at: Bolton, MA and Rowe, MA

Inspection conducted: November 5-9, 1990

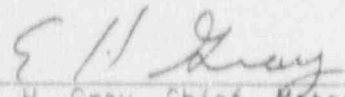
Inspector:



J. L. Carrasco, Reactor Engineer, Materials and
Processes Section, EB, DRS

12-03-90
date

Approved by:



E. H. Gray, Chief, Materials and Processes
Section, Engineering Branch, DRS

12/3/90
date

Inspection Summary: Inspection on November 5-9, 1990 (Inspection Report
No. 50-029/90-24)

Areas Inspected: Routine inspection to review the licensee's engineering organization, staffing, communications, management support, design changes and modification process.

Results: No violation or deviation was identified.

DETAILS

1.0 Persons Contacted

Yankee Atomic Electric Company

- * R. A. Mellar, Project Manager
- * W. G. Jones, Manager of Engineering
- S. A. Rosenberg, Lead Electrical Engineer
- D. R. LeFrancois, Senior Engineer
- * B. W. Holmgren, Lead Mechanical Engineer
- J. Sweeney, Electrical Engineer
- G. Philley, Civil/Structural Consultant
- B. Jwaszewski, System Engineer
- D. Difazio, Mechanical Engineer
- N. Fetherston, ISI Coordinator Mechanical Engineer

United States Nuclear Regulatory Commission

T. Koshy, Senior Resident Inspector

* Denotes personnel present at exit meeting held on November 9, 1990.

2.0 Purpose

The purpose of this inspection was to assess the adequacy of the licensee's program for engineering and technical support of the plant operation including management support, interfaces with offsite and onsite engineering organizations, staffing levels, experience and training of the engineering staff engaged in safety related work.

3.0 Engineering Organization (40703)(37700)

Engineering and technical support for Yankee Rowe Nuclear Station are provided by two engineering organizations, the onsite plant engineering and the offsite corporate engineering group.

3.1 Onsite Engineering Organization

Yankee Nuclear Power Station's (YNPS) site engineering consists of a Plant Superintendent, Assistant Plant Superintendent and five working sections consisting of administration, maintenance, operations, technical and training section. The inspector focused his attention on the maintenance, operations and technical sections. Each of these sections is headed by a Section Director who directly reports to the Assistant Plant Superintendent.

3.2 Offsite Engineering Organization

The Yankee engineering corporate office is located in Bolton, Massachusetts. The engineering organization in Bolton is part of the Yankee Project Department (YPD) and is headed by an Engineering Manager.

The Engineering Manager directs the technical and administrative activities of project engineering for Yankee Rowe and assumes project management responsibilities in the absence of the Project Manager. Under the Engineering Manager, the Corporate Engineering Organization is divided into four engineering disciplines each under the direction of a lead engineer. They interact with each other as a task force to the extent necessary to resolve complex engineering tasks, such as those involving multi-disciplines (e.g., major engineering modification).

The Lead Engineers are assigned within the Yankee Project for each engineering discipline. Their responsibilities include directing the work of support engineers within their discipline, performing engineering tasks as required, and providing administration, supervision, and overall project planning within their discipline for the Yankee Project. The four engineering discipline groups are: instrumentation and controls (I&C), electrical, civil/mechanical, and systems. Each engineering discipline group is made up of four engineers, with the exception of the civil/mechanical group which has five engineers.

4.0 Findings

Several factors have contributed to Yankee Rowe's successful 30 years of operations. Yankee Rowe's engineering was noted by the inspector to be composed of a stable, motivated and qualified engineering staff, capable of producing engineering modifications without relying on architect/engineering (A/E) firms or consultant services from outside the Yankee organization.

YNSD is a practical organization that is committed to excellence. Challenges at the plant are resolved in accordance with engineering instructions and quality assurance procedures. As a result of thorough planning, these engineering resolutions are usually implemented within prescribed schedules. A task force composed of multi-discipline onsite and offsite engineering can be pulled together rapidly, when needed, and without complicated formal organizational process. YNSD has managed to keep their engineering support to the plant as direct as possible. In comparison to later vintage nuclear plants, Yankee Rowe has an uncomplicated system configuration design and a basic system controls. These factors permit adequate engineering coverage with a relatively small engineering staff. Because of these attributes, communication is not a problem and safety issues are resolved in an effective and efficient manner.

5.0 Engineering Modification Process and Implementation

Engineering changes to the plant and/or procedures affecting safety related structures, systems or components at Yankee Rowe are controlled through Yankee Nuclear Service Division (YNSD), Engineering Instruction No. WE-100, Revision 19, dated March 23, 1990, entitled, "Engineering Design Change Request"; and YNSD, Engineering Instruction No. WE-107, Revision 10, dated November 3, 1989, entitled, "Specifications." Based on these main engineering instructions individual sub-specifications are developed as needed to suit any specific design modification. The inspector found the engineering instructions acceptable and adequately support the modification process.

5.1 Yankee Project Procedure 17, Design Change Plan and Control System

The purpose of Yankee Project Procedure 17 is to provide an overall management tool to efficiently control the schedule, scope, and cost of the design changes. It also enhances communication within the Yankee Nuclear Service Division (YNSD) and with the plant to reach a consensus on the scope, cost and schedule of design change early in the process. Quality assurance (QA) and safety evaluation requirements are fulfilled by the procedures specified in the Licensee's Engineering Manual. This procedure is utilized by the licensee for major design changes with specific characteristics, for example: those that involve multi-discipline activities, design changes to be carried out over a period of more than six months, design changes that involve more than 300 man-hours of engineering effort, and design changes that are needed to assure the safety or regulatory compliance of plant performance.

The inspector found Procedure 17 acceptable and adequate to fulfill its purpose.

5.2 Implementation of EDCR 89-302 and EDCR 90-301

In order to assess the implementation of Yankee Rowe's modification process, the inspector selected two complete modification packages. These were: Engineering Design Change Request (EDCR) 89-302, entitled, "Pressurizer Auxiliary Spray and High Pressure Safety Injection (HPSI) Throttle Valve Modification," and EDCR 90-301, entitled, "Safety Injection Tank Replacement." For the purpose of this inspection, the inspector focused on the following attributes:

- Organization to support and implement the modification
- Delegation of responsibilities
- Inter-discipline interaction
- General assessment of the technical adequacy of the modifications
- Technical qualifications and analytical ability of individual engineers engaged in the modifications

To assess the last two attributes, the inspector conducted interviews with the engineering personnel responsible for the modifications. The inspector determined that they are aware of the importance of obtaining and understanding the complete system design bases before proceeding into the design process. In addition to their technical expertise, the engineers are aware of industry guidance documents such as the Nuclear Safety Analysis Center (NSAC) 105, entitled, "Guidelines for Design and Procedure Changes in Nuclear Power Plants" and NSAC 125, entitled, "Guidelines for 10CFR 50.59 Safety Evaluations." The inspector found that the quality and technical adequacy of the modification package EDCR 89-302 and EDCR-301 are acceptable.

6.0 System Walkdown of the Modifications

At the site, the inspector performed a walkdown of modifications EDCR 89-302 and EDCR 90-301 with the licensee's cognizant engineer from the Bolton office and the responsible engineer at the site.

Briefly, the purpose of EDCR 89-302 was to add redundant parallel motor operated throttle valves, SI-MOV-519 and SI-MOV-520, to the Emergency Core Cooling System discharge header. Also, redundant parallel valves PR-MOV-548 and PR-MOV-549 were added to the auxiliary spray line piping in No. 1 steam generator cubicle elevation 1083'-1", of the vapor container. These additions were made to enhance the plant's capability to control the main coolant system by providing safety grade pressurizer auxiliary spray capability, and to enhance post LOCA pump recirculation flow control by providing redundant safety grade injection throttling capability.

The purpose of EDCR 90-301 was to replace the original aluminum safety injection tank with a new stainless steel tank. The new tank is a replacement component in accordance with the rules of ASME Section XI, IWA 7220 and was fabricated from 304L stainless steel. The licensee selected this material due to its superior corrosion resistance and weldability, these properties are suitable for the intended service of the tank. During the walkdown the inspector did not find any condition adverse to quality and found the technical adequacy of both modifications to be satisfactory.

7.0 Conclusion

Based on the above, the inspector determined that, for those areas inspected, the licensee's nuclear engineering services group is organized to provide adequate engineering to support plant activities.

8.0 Exit Meeting

The inspector met with licensee representatives (denoted in Section 1.0) at the conclusion of the inspection on November 9, 1990. The inspector summarized the scope and findings of the inspection.

At no time during the inspection was written material provided by the inspectors to the licensee. The licensee did not indicate that proprietary information was involved within the scope of this inspection.