U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-29/90-21

Docket No. 50-029

License No. DPR-3

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

Inspection at: Rowe, Massachusetts

Inspection conducted: October 15-19, 1990

Inspector: J. Carrasco — 11-19-90
J. E. Carrasco, Reactor Engineer, Materials and Processes Section, EB, DRS — date

Approved by: E H Gray — 11/19/90
E. H. Gray, Chief, Materials and Processes Section, EB, DRS — date

Inspection Summary: Report 50-029/90-21

Area Inspected: Special, announced inspection by a region-based inspector of licensee actions in response to NRC/IE Bulletin 79-14, Seismic Analysis of As-built Safety-Related Piping Systems; and verification of design analyses and work performed in modifications affected by this bulletin.

Results:

1. One previously unresolved item regarding the sample population of piping supports to provide acceptable confidence level to assure the adequacy of a portion of the original IE Bulletin 79-14 inspection scope remains open. (see section 7.0)

2. An unresolved item regarding an incomplete Low Pressure Safety Injection (LPSI) stress analysis was opened. (see section 5.0)

3. One non-cited violation regarding a failure to document a non-conformance regarding discrepancies between as installed pipe supports and the piping support drawings by initiating a Non-conformance Report (NCR) on a timely basis. (see section 6.0)

DETAILS

1.0 Persons Contacted

Yankee Atomic Electric Company (YAEC)

* N.N. St. Laurent, Plant Superintendent
* R.M. Mitchell, Maintenance Manager
* B. Wood, Administrative Service Manager
* D.R. Lefrancois, Senior Engineer
* J.A. Kay, Technical Service Manager
* B.W. Holmgren, Lead Mechanical Engineer
* T. Henderson, Assistant Plant Superintendent

United States Nuclear Regulatory Commission

* T. Koshy, Senior Resident Inspector
* M. Markley, Resident Inspector

* denotes those who attended the exit meeting

2.0 Background

IE Bulletin 79-14 was issued on July 2, revised on July 18, and supplemented on August 15 and September 7, 1979. The bulletin requested licensees to take certain actions to verify that seismic analyses are applicable to as-built plants. To accomplish this objective, field verification of large bore safety class piping and pipe supports was required.

At Yankee Nuclear Power Station, the licensee contracted Cygna Energy Services to perform the tasks required of IE Bulletin 79-14. The only piping in the scope of IEB 79-14 which was not field verified by Cygna Energy Service was the Safety Injection system. For this piping system including pipe supports, several discrepancies were reported on different occasions. In order to correct these discrepancies, the licensee had re-contracted Cygna to perform a field verification and evaluation of this particular system outside the vapor containment.

Briefly, in terms of system description, the Safety Injection system at Yankee Nuclear Power Station utilizes three high pressure and three low pressure safety injection pumps to move water from the Safety Injection Tank to the four Main Coolant System loop cold legs following a loss-of-coolant accident.

3.0 Inspection purpose and scope

The purpose of this inspection was to assess the adequacy of the licensee's corrective action for identified supports that had differences between the as-built and the as-designed condition. These discrepancies were identified on the following systems: Low Pressure Safety Injection, High Pressure Safety Injection, Cavity fill and spent Fuel Pit Cooling and Pump. All these four systems made-up the Safety Injection System and are located outside of the Vapor Container in the Primary Auxiliary and Diesel Generator Buildings and are safety related.

To implement the corrective action the licensee had re-contracted Cygna to perform the following specific tasks:

(a) Walkdown and to provide as-built drawings of the piping and the supports.

(b) Compare the as-built drawings against existing piping and support drawings to identify the discrepant conditions.

(c) Prepare a calculation for any non-conforming configurations to determine if the piping and supports are within design allowable conditions.

4.0 Piping and Pipe Support Walkdown Procedure and Implementation

The inspector determined that the piping and support walkdowns were performed in accordance with Reference 5.2 (Attachment D) of the Cygna's work instruction for the field verification of non-seismic piping systems outside the vapor container. Attachment D is the Yankee Atomic Nuclear Service Division, Procedure No. YR-WI-02, titled "Work Instructions for Performing Field Walkdowns of Piping and Pipe Supports Systems."

In addition to these requirements, several additional requirements were outlined in this Cygna procedure. For example: for piping walkdowns, the support number noted on the piping isometric or piping layout drawings was verified; the connection type, e.g., bolted flange, welded, etc., was noted at all termination points.

For pipe support walkdowns, the following additional requirements were met, for example: the general condition of the support was examined; conditions which are deemed to be nonconforming, e.g. deteriorated members, loose connections, etc., were recorded. These and several other requirements were clearly stated in the Cygna walkdown procedure, and they were field implemented as discussed in the next section of this report.

The inspector found the walkdown procedure to be acceptable and adequate for this particular task and properly implemented.

5.0 Findings

In order to assess the licensee's corrective action of piping and support discrepancies, the inspector randomly selected pipe supports from the Safety Injection System outside the vapor container (VC). Inside the VC the Shutdown Cooling System was selected to assess the licensee's original 79-14 program.

The selected supports in the Safety Injection were PRSL-SH-1, PRSH-RH-15 and PRSH-SH-1. The selected supports in the Shut-down Cooling System were PRCH-SNB-4, PRCH-SNB-3, PRCH-H4 and PRCH-SNB-1. The review of these supports included the following:

* Visual Inspection of the supports to determine that the physical configuration was reflected in the design calculation.

* General location to determine that the isometric drawing reflected the physical location of the support along the pipe run.

* Spot check of the calculation, tables, interaction equations, and sketches for accuracy, units, and consistency.

The inspector, with the licensee's responsible engineer, examined the system by a walk-through inspection to determine the physical configuration of the system.

The system appeared to be in good physical condition and in the as-design configuration. The inspector found the selected supports to be adequate to perform their safety functions.

The inspector reviewed the licensee's status reports prepared by Cygna on the Safety Injection System outside the vapor container. As a result of

Cygna's review of the markups and the evaluation of the HPSI System Support, all piping in the HPSI system remains Code qualified despite the configuration changes.

Cygna evaluation on the Spent Fuel Pool Cooling piping and pipe supports, indicates that, although there are configurational changes and support substitution in the system, the piping and the supports were found to be Code-qualified in their as-built condition.

In the case of LPSI Accumulator Tank Vent and Nitrogen Bottle Piping, Cygna has completed their evaluation showing that both systems are Code-qualified in their present configuration. However, the evaluation of the discharge portion of LPSI and the Cavity Fill Systems, is still in the process of final approval. This evaluation is being done using Cygna walkdown information. The licensee had informed the inspector that the preliminary analysis showed that the system is within code allowable stress values. However, the licensee did not provide final and official results of the analysis at the time of the exit meeting. Nevertheless, at the exit meeting, the licensee formally committed to complete the review of the stress analysis for the LPSI system prior October 26, 1990. Also, corrective maintenance will be performed by the licensee on all supports before December 31, 1990.

This is an unresolved item pending final NRC review (50-029/90-21-01).

6.0 Failure to Initiate a Prompt Non-conformance Report (NCR)

The inspector reviewed the findings of Cygna to determine that several discrepancies existed due to differences in the field installed configuration in comparison to the requirement of design as shown on the piping drawing. The safety significance of these discrepancies is low. Nevertheless, these discrepancies were not properly documented via Non-conformance Report (NCR) as required by the licensee's station procedure (AP-0206). This is contrary to 10CFR Part 50, Appendix B, Section XV on nonconforming materials, parts or components and Section XVI on Corrective Action.

The licensee informed the inspector that NCRs have been initiated for these supports. These NCRs will be evaluated by the Plant Operation Review Committee by October 26, 1990. Maintenance requests (MRs) which describe the corrective measures for these supports will be written and issued by October 26, 1990.

The failure to initiate a prompt NCR constitutes a violation. However, the violation is not being cited because the criteria specified in Section V.A of the enforcement policy were satisfied.

7.0 Follow-up on Previously Identified Items

(Open) Unresolved Item 50-029/90-04-01

The inspector reviewed the licensee's follow-up action, in terms of the licensee's committment to the NRC during a previous inspection. The committment was made to perform certain actions in order to assure the adequacy of the YAEC original (1979-80) inspection.

On June 1990, the licensee committed to include some systems originally inspected by Cygna to determine the adequacy of the implementation of Bulletin 79-14. The inspector found that the number of supports selected in the sample by the licensee to fulfill this commitment was not enough to provide an acceptable level of confidence for their program under IEB 79-14.

In response to this finding the licensee committed to conduct a similar verification on an expanded basis outside the containment. The confirmatory walkdowns will commence before the end of the year and will be completed prior to April 1, 1991. The size of the sample population that will be reverified, will be at least ten percent of the total number of supports selected originally under IEB 79-14. Therefore, the unresolved item 50-029/90-04-01 will remain open, until the NRC reviews the licensee's reverification program.

8.0 Documents reviewed

91564.004	Cigna Transmittal of Isometrics and Support Drawings for the LPSI and Cavity Fill Systems, dated July 12, 1990.
91564.005 Rev.1	Cigna Status Report - LPSI Accumulator Tank Vent and Nitrogen Bottle Piping, dated July 24, 1990.
91564.001	Cigna Status Report - HPSI System Supports, dated July 3, 1990.
91564.007	Cygna Status Report - Spent Fuel Pool Cooling Piping and Supports, dated July 31, 1990.
91564.006	Cygna Status Report - Safety Injection Piping Associated with Heater E-21 and Pump P-69, dated July 31, 1990.
----	Yankee Atomic - Bolton Memorandum subject Nonconformance Report (NCR) 89-016 and 89-017.
AP-206,Rev.11	Station Procedure on "Nonconformance Report" - dated July 1990.
----	Cygna Work Instruction for Field Verification of Non-Seismic Piping Systems Outside the Vapor Container, dated May 10, 1990.
80023-PI-1204 SHT.2 of 3	Earthquake Engineering Systems (EES), Piping Isometric - Safety Injection Piping, part 4.
80023-PI-1203 SHT.5 of 5	EES Safety Injection Piping, part 3.
80023-PI-1202 SHT.4 of 4 Rev. 2	ESS Safety Injection Piping, part 2.
80023-PI-1202 SHT.3 of 4	ESS Safety Injection Piping, part 2.
----	Cygna Pipe Support Evaluation, System SI-207, Support No. PRSH-SH-1, dated 10-11-89.
----	Cygna Pipe Support Evaluation, System SI-207, Support No. PRSH-RH-15, dated 10-9-89.
----	Cygna Pipe Support Evaluation, System SI-207, Support No.PRSH-SH-1, dated 10-13-89.
----	Cygna Pipe Support Evaluation, System SC-121, Shutdown Cooling Piping Supports dated 1-8-88, Support No. PRCH-SNB-1 (data point 160).

----	Cygna Pipe Support Evaluation, System SC-121, Shutdown Cooling Piping, Support No. PRCH-H4 (data point 18).
----	Cygna Pipe Support Evaluation, System SC-122, Shutdown Cooling Piping, Support No. PRCH-SNB-3 (data point 16).
91564 SHT.B-22	Cygna Isometric Disposition for Spent Fuel Pool.
91564 SHT.B-5	Cygna Isometric Disposition for LPSI.
91564 SHT.B-22	Cygna Isometric Disposition for HPSI.
----	Safety Injection System P&IDs M-7-1,2,3.
BYR-90-139	Letter from J. K. Thayer (YAEC) to T. T. Martin (NRC) dated October 24, 1990 regarding pipe stress and pipe support planned activities.

9.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable, violations or deviations. Unresolved items identified during this inspection are discussed in paragraphs 5.0 and 7.0.

10.0 Exit Meeting

The inspector met with licensee representatives (see Paragraph 1) at the end of the inspection on October 19, 1990. The inspector summarized the purpose and scope of the inspection and identified the inspection findings. At no time during this inspection was written material provided to the licennee by the inspectors.