



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION REPORT BY THE OFFICE OF SPECIAL PROJECTS

EMPLOYEE CONCERN ELEMENT REPORT 17303

"INSTRUMENT LINE CLAMPS"

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

I. SUBJECT:

Category: Construction (10,000)
Subcategory: Instrument line installation as related to construction
(17,300)
Element: Instrument Line Clamps (17,303)
Employee Concern: IN-85-016-003
EX-85-047-001

The basis for Element Report 17303, Revision 3, prepared January 12, 1987 are two employee concerns on Watts Bar. One concern states, "Unit 1, Elevation 676, 3/4-inch pipe clamps have been used in place of the required 1/2-inch pipe clamps, in instrument panel applications. Concerned individual (CI) has been told by other personnel that this type of substitution had been done throughout the plant." The other concern states, "tubing not clamped properly. This is a site-wide condition. Tube 3/8-inch outside diameter stainless steel instrument lines, Units 1. Clamps are bent, crooked, tight or loose. Condition was noticed about a year ago."

II. SUMMARY OF ISSUE

The issue raised by this element is that instrument line clamps were either improperly installed and/or damaged during or after installation. Some instrument line clamps are missing altogether. Unacceptable clamp substitutions were made in local instrument panel application.

TVA evaluated these concerns at Watts Bar and determined to be potentially generic to Sequoyah.

III. EVALUATION

The staff has reviewed the TVA employee concern. The TVA report identified that a sample walkdown was performed which identified that 49 percent of the 302 clamps sampled were loose. In addition, an unspecified number of clamps were missing altogether. Based on this, TVA has issued SMI-0-317-25 to walkdown all accessible instrument sensing lines, sampling lines, radiation monitoring lines and associated drain lines to identify and correct the loose,

or damaged clamps. However, the work on SMI was terminated because of changing torque requirements as defined on Construction Specification N2C-946. TVA has justified the use of loose instrument line clamps by piping analysis and will complete the work on SMI-0-317-25 before the return to service from Cycle 4 outage for Unit 2.

TVA has also committed to inspect and correct all Unistrut-type clamps on critical supports on all piping systems required for safe shutdown prior to plant restart.

The staff has reviewed the information and requested additional information regarding missing instrument line clamps. TVA, in their response by letter dated January 14, 1988, has informed the staff that they have also issued SMI-0-317-52 to implement a sampling program to determine if the installed pipe/tubing hangers meet the required span criteria and to find any missing clamps. A sample of 60 clamps were chosen at random and the span adjacent to these clamps were measured for evaluation of potential overspan. TVA has performed calculations, which indicate that the sampled instrument lines and the corresponding supports meet normal code allowances and are acceptable as installed.

The revised Modification and Additions Instructions (M&AI 09) and the revised drawings 47A 050-17, -18 and -18A will prevent recurrence of the problem.

IV. CONCLUSION

Based on our review, we find TVA's investigation, evaluation and the corrective action plans to resolve the employee concern as described in CO-17303-SCN, Rev. 3, is acceptable and believe that implementation of these corrective actions will close the issue. Verification of corrective actions which TVA has identified as a restart item should be verified by NRC inspectors in a future inspection.

I. Subject - Compression Fittings

Category: Construction (10000)
Subcategory: Instrument Line Installation (17300)
Element: Compression Fittings (17304)
Concerns: XX-85-050-001
HDE-85-001
JAM-85-001
IN-85-514-001
IN-85-795-001
IN-85-795-N04
PH-85-002-027
XX-85-050-002
XX-85-050-003

This basis for Element Report C017304 - SQN Revision 3, dated January 6, 1987, are the Employee Concerns listed above which state, in order:

"Inadequate quality assurance controls were applied to the installation of instrument tubing compression fittings at Sequoyah. No further information available. No follow up required."

"2-FSV-43-319 has Parker tubing reducers with Imperial Eastman nuts. This is an air sample line."

"Compression fittings - employee found 2 out of 4 Imperial Eastman fittings installed improperly (ferrule installed backwards). Will this affect both Nuclear and/or Personnel safety."

"1/4"D tubing from drn 150 valve to drn hdr on system 276 closed drain system requires reaming when cut with a tube cutter. This is not always done, nor is there an inspection hold point. It is possible, because of tubing deformation during cutting process, that drain systems will not function as designed and an individual cutting into a system could become contaminated. Both Units 1 and 2."

"Compression fittings on instrument tubing are not installed per vendor instructions"

"NRC identified the following concern for review of QTC file. "No formal training given to craft on compression fittings installation. Review of file indicates that this concern applied prior to unit 2."

"Instrumentation tubing which had been cut short was not recut, but was improperly installed in the ferrule connection to compensate for the improper length. Details known to QTC, withheld due to confidentiality. Construction department concern. CI has no further information. No followup required."

"Inadequate quality assurance controls were applied to the installation of instrument tubing compression fittings at Browns Ferry. No further details available. No follow up required."

"Inadequate quality assurance controls are applied to the installation of instrument tubing compression fittings at Bellefonte. No further details available. No follow up required."

These concerns were evaluated by TVA as potentially nuclear safety-related. The non-Sequoyah concerns were evaluated as potentially applicable to Sequoyah (generic).

- II. Summary of Issue - Compression fittings were not installed in accordance with the manufacturer's recommendations. Craft personnel were not trained in how to install compression fittings. In addition, the installation of compression fittings was not adequately addressed by the Quality Assurance program.
- III. Evaluation - The TVA evaluators reviewed documentation, including the applicable Quality Technology Company Investigation Report. They performed a walkdown of various instrument panels on elevations 669 and 690 of the auxiliary building. They examined storage of compression fittings in the site power stores.

The element report states that some compression fittings were not installed in accordance with the manufacturers' recommendations; no formal training program on compression fittings existed during construction and all personnel installing compression fittings were not trained in the operations training program; and there were no procedures governing the installation of compression fittings or Quality Assurance involvement. The element report further states that no visible leaking compression fittings were identified during the walkdown process. TVA has concluded that fittings that are not leaking are acceptable based on previous history and a test from Singleton Materials Engineering Lab.

Corrective actions included a procedure defining requirements for installation of compression fittings and periodic training for the appropriate technicians. These actions were assigned tracking number CATD 17304-SQN-01, until the actions are complete.

- IV. Conclusions - The NRC staff believes that the TVA investigation of the concerns was adequate, and their resolution of the concerns as described in Element Report C017304 SQN, Revision 3, is adequate.

Although none of the corrective actions were judged by TVA to be restart items, a position with which the NRC staff agrees, the NRC should verify implementation of the corrective actions in a future inspection.