

TENNESSEE VALLEY AUTHORITY
ATLANTA, GEORGIA
CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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June 17, 1982

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U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - REVISED RESPONSE TO VIOLATION
50-438,50-439/81-33-08 - COLD SPRUNG PIPE

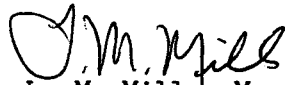
This is in response to F. S. Cantrell's letter dated January 26, 1982, report numbers 50-438/81-33, 50-439/81-33, concerning activities at the Bellefonte Nuclear Plant which appeared to have been in violation of NRC regulations. The previous response to this violation was submitted March 11, 1982. As discussed with R. V. Crlenjak by telephone on April 13 and June 17, 1982, enclosed is our revised response to the citation. Since the submission of our previous response, TVA has determined that the admission of violation and corrective action was inappropriate. This revised response denies the violation and supersedes our previous response.

If you have any questions concerning this matter, please get in touch with R. H. Shell at FTS 858-2688.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


L. M. Mills, Manager
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
COLD SPRUNG PIPE
SEVERITY LEVEL VI VIOLATION 50-438,50-439/81-33-08
REVISED RESPONSE

Description of Violation

10 CFR 50, Appendix B, Criterion V and Tennessee Valley Authority (TVA) Final Safety Analysis Report, Section 17.1A.5, states in part: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

Paragraph 7.5e of BNP-QCP-6.17 R2 states: "Rigid supports capturing the pipe shall be verified not to have the pipe cold sprung."

Contrary to the above, during February and March 1981, the resident inspector identified two areas in the Chemical Addition Boron Recovery System where piping sections had apparently been cold sprung due to installation of seismic supports. TVA completed their investigation of these areas in November and December 1981 and determined that the piping sections had in fact been cold sprung.

Admission or Denial of the Alleged Violation

TVA denies the alleged violation. The item cited by the NRC resulted from a conservative misinterpretation by BLNP Construction (CONST) of a provision concerning cold springing in General Construction Specification G-43, "Support and Installation of Piping Systems." TVA's G-43 paragraph 2.6 states in part that cold springing is not permitted unless specified on design drawings. The improper application by BLNP CONST resulted in the erroneous admission of a violation by TVA, the incorporation of the pipe cold springing provision in site quality control procedure BNP-QCP-6.17, "Seismic Support Installation and Inspection," undue requirements on BLNP CONST, and rework of supports which should not have been performed. This has become apparent as a result of a memorandum from the Bellefonte Design Project dated March 29, 1982 (CEB 820329 010), which clarified the intent of G-43 and provided guidance for evaluating the significance of pipe alignment on pipe and pipe supports.

The memorandum states in part that a reasonable temporary force may be applied to a pipe to position it for welding to an equipment nozzle and that this practice is not considered cold springing. The term cold spring has been improperly applied by BLNP CONST to misalignment of pipe and supports and resulting preload in the pipe and supports when the two are forced to mate up. The ASME Code permits bending of a pipe provided minimum wall thickness and ovality requirements are met. The deformation or bending associated with misalignment is not a problem for the pipe.

Typical supports developed for small pipe qualified by alternate analysis were very conservatively designed. Design loads were based on allowable stress in the pipe, and deflection limits generally resulted in very low stress in the support. The mate-up force on typical supports is not a concern, but unsightly bends and sags should be avoided.

Cold springing is a process which the designer takes credit for in meeting equipment nozzle allowables. The ASME Code requires that if it is considered in design it must be specified to CONST. Reference to cold spring in G-43 is a duplication since G-43 establishes nozzle protection procedures which prevent cold spring. The only practical application of cold spring is in large pipe such as the primary system and feedwater and steamlines where space and cost considerations prohibit bends and loops to increase flexibility. Large forces are required to induce the cold spring in these systems. The weight and stiffness of large pipe dictate the use of chain hoists, adjustable temporary supports, pry bars, etc. The large number of variables prohibits establishing rigid rules for pulling pipe into place.

In summary, the assembly procedures of G-43 establish good construction procedures which will minimize preload in pipe and on pipe supports. Although it is not stated in G-43, mechanical devices and adjustable supports must be used to position pipe for fabrication. If the assembly procedures of G-43 are followed, weld shrinkage stress, redistribution of load when temporary supports are removed, shift of load because of insulation and fluid weight, temperature change, etc., will cause the pipe to bind against a support. If rigid supports are used, this fact must be accepted. Minor plastic deformation during shakedown of the system will relieve these forces.

BLNP CONST has eliminated the paragraph from BNP-QCP-6.17 which requires inspection for the misinterpreted term "cold spring." The procedure has been revised and issued. All requirements specified by G-43, including the clarified version of cold spring, will be adhered to strictly. Structural steel pipe supports will not be reworked to relieve forces induced from alignment of piping and supports. Therefore, in light of the clarification supplied by the referenced memorandum, TVA considers no item of noncompliance exists.