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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

August 18, 1982

IE BULLETIN NO. 82-01, Rev. 1, Supplement 1: ALTERATION OF RADIOGRAPHS OF  
WELDS IN PIPING SUBASSEMBLIES

Addressees:

All nuclear power reactor facilities holding an operating license (OL) or construction permit (CP).

Purpose:

The purpose of this supplement is to inform CP holders and licensees about events with potentially significant impact upon the health and safety of the public and to request appropriate action. IE Bulletin 82-01 Rev 1 notified licensees and CP holders about alterations to radiographs supplied to Washington Public Power Supply System (WPPSS) Unit 3 by Associated Piping and Engineering Corporation of Compton, California. This present supplement describes alterations of radiographs that ITT Grinnell Industrial Piping, Inc. of Kernersville, North Carolina supplied for Consumer Power Company and is forwarded for action to reactor CP holders and licensees listed in Table 1 and for information to all other reactor CP holders and licensees.

Description of Circumstances:

In November of 1981, Consumers Power Company (CPC) notified the U.S. Nuclear Regulatory Commission (NRC) that alterations were found in four sets of piping weld radiographs supplied to the Midland 1 plant by ITT Grinnell Industrial Piping, Inc. of Kernersville, North Carolina. These alterations were discovered during a review of approximately 94,000 shop radiographs.

The alterations consisted of artificial enhancement of the penetrameter 4T-hole image specified in the ASME Code. The radiographs appeared to have been altered in one of three ways: (1) touching up with a soft lead pencil, (2) scribing or scratching with a sharp object, or (3) indenting with a sharp object. These forms of enhancement are very difficult to detect by normal film interpretation techniques (i.e., subdued background lighting). Using direct overhead lighting, the alterations may be detected by close visual inspection of film surface reflections as the film is manipulated at various oblique angles.

An investigation was performed at the ITT Grinnell facility on March 16-18, 1982. Region IV and IE reviewed the results of the investigation and concluded that a potentially generic problem existed. The investigation and review established the following:

1. Radiographs were altered on occasion over a period of approximately six years prior to the date of this inspection.
2. Radiographs had been altered were for welds of pipes with wall thicknesses less than  $\frac{1}{2}$ -inch for which isotopic radiography and number 7 or 10 penetrameters were used.
3. Certain weld radiographs, had been altered for piping subassemblies that were furnished to TVA's Hartsville Units A1, A2, B1, and B2.
4. Similar discrepancies may exist at other nuclear plants (listed in Table 1) using fabricated piping assemblies from ITT Grinnell, Kernersville, NC.

ASME Section III Code Rules, Articles NB-5000 and NC-5000, require that weld quality acceptance of Class 1 and 2 piping be evaluated on the basis of radiography. In radiography examination, meaningful interpretation of weld quality is dependent on the use of a radiographic technique of sufficient sensitivity as shown by the penetrameter image indicators on the film. The adequacy of technique sensitivity is confirmed by the ability to visibly discern the appropriate T-hole images of the penetrameter when evaluating the radiographs for weld quality in accordance with the governing Code rules. Radiographs that have had penetrameter image quality indicators artificially enhanced by the discussed methods violate the intent of ASME Code requirements. Accordingly, the following actions are necessary to reverify independently that the examined welds of the subassemblies fabricated by ITT Grinnell are acceptable for plant service.

Action To Be Taken by Licensees, Applicants for an Operating License, and Holders of Active Construction Permits (Groups 1&2, Table 1):

1. Determine on the basis of a 100 percent review of radiograph sets representing the welds associated with pipe wall thickness less than  $\frac{1}{2}$ -inch in shop fabricated quality Class 1 & 2 subassemblies provided by ITT Grinnell, Kernersville, NC, whether the applicable ASME Code penetrameter sensitivity (2-2T or 2-4T as required) is unaltered, and clearly discernible, and that acceptable weld quality is demonstrated.
2. In those cases where the specified penetrameter sensitivity is not discernible or is apparently enhanced in any manner, as by the methods discussed, weld quality interpretation may be based on the equivalent or higher penetrameter sensitivity discernible on the film sets. For example, for those radiograph sets for which the required 2-4T penetrameter sensitivity is not discernible, or found artificially enhanced on visual inspection, film interpretation of weld quality may be based on the presence of discernible 2-2T or 2-1T sensitivity exhibited by the radiographs.
3. Where conformance with Items 1 and 2 cannot be satisfied, appropriate steps shall be taken to ensure the acceptability of the affected welds in accordance with the applicable ASME Section III Code requirements in effect for plant construction.

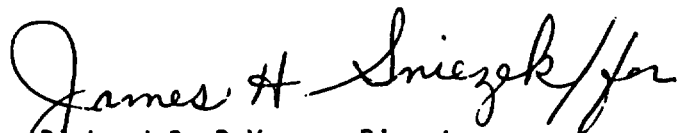
4. The above actions are to be completed within 90 days of receipt of this bulletin for plants in Group 1, Table 1. For plants in Group 2, Table 1, completion is required within 90 days of receipt of this bulletin or prior to issuance of an OL, whichever comes first. All quality assurance records reflecting the review findings and disposition of discrepancies identified shall be maintained and available for NRC review.
5. A written report describing the findings and corrective actions taken, signed under oath or affirmation under provisions of Section 182a, Atomic Energy Act of 1954, shall be submitted within 30 days after completion of Items 1 through 4 to the Regional Administrator of the appropriate NRC Regional Office. A copy of the report is to be forwarded to the Director, Office of Inspection and Enforcement, NRC, Washington, D.C. 20555.

Actions To Be Taken by Applicants for Construction Permits or Utilities  
Whose Construction Permits Are Suspended or Delayed (Group 3; Table 1):

No action required unless reactivation of construction or transfer, sale or consignment of the subject piping subassemblies to another nuclear plant site is contemplated. In such cases both the NRC and recipient permit holder, or licensee, are to be notified of the disposition of said subassemblies under provisions of 10 CFR Part 21 regulations.

This request for information was approved by OMB under clearance number: 3150-0084. Comments on burden and duplication should be directed to the Office of Management and Budget, Reports Management, Room 3208, New Executive Office Building, Washington, D.C. 20503.

If you need additional information, please contact the Regional Administrator of the appropriate NRC Regional Office or this office.

  
Richard C. DeYoung, Director  
Office of Inspection and Enforcement

Technical Contact: M. S. Wegner  
301-492-4511

Attachments:

1. Table 1
2. List of Recently Issued IE Bulletins

TABLE 1  
SITES WITH PIPING ASSEMBLIES FROM ITT GRINNELL

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Group 1	Group 2	Group 3
Arkansas Nuclear One Davis-Besse Farley 1&2 McGuire 1&2	Nine Mile Point 2 Marble Hill 1&2 Midland 1&2 Comanche Peak 1&2 Susquehanna 1&2 Catawba 1&2	Hartsville A1, B1, A2, & B2 Phipps Bend 1&2

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LIST OF RECENTLY ISSUED IE BULLETINS

Bulletin No.	Subject	Date of Issue	Issued to
82-02	Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR Plants	06/02/82	All PWRs facilities with an OL and all power reactor facilities with an OL or CP
82-01 Rev. 1	Alteration of Radiographs of Welds in Piping Subassemblies	05/07/82	All power reactor facilities with an OL or CP
82-01	Alteration of Radiographs of Welds in Piping Subassemblies	03/31/82	The Table 1 facilities for action and to all others for information
81-02 Supplement 1	Failure of Gate Type Valves to Close against Differential Pressure	08/18/81	All power reactor facilities with an OL or CP
81-03	Flow Blockage of Cooling Water To Safety System Components by <u>CORBICULA SP.</u> (ASIATIC CLAM) and <u>MYTILUS SP.</u> (MUSSEL)	04/10/81	All power reactor facilities with an OL or CP
81-02	Failure of Gate Type Valves to Close Against Differential Pressure	04/09/81	All power reactor facilities with an OL or CP
81-01 Rev. 1	Surveillance of Mechanical Snubbers	03/04/81	Specific power reactor facilities with a CP
80-17 Supp. 5	Failure of Control Rods to Insert During a Scram at a BWR	02/13/81	To all specified BWRs with an OL & All BWRs with a CP
81-01	Surveillance of Mechanical Snubbers	01/27/81	All power reactor facilities with an OL and selected power reactor facilities with a CP

OL = Operating License  
CP = Construction Permit