



UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION III
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TELEPHONE
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October 4, 1973

Iowa Electric Light and Power Company
ATTN: Mr. Charles W. Sandford
Vice President, Engineering
Security Building
P. O. Box 351
Cedar Rapids, Iowa 52405

Docket No. 50-331

Gentlemen:

As a result of previous information we received that your control rods could contain inverted absorber tubes, this office notified you by letter dated July 26, 1973, that appropriate action should be taken by you to verify proper assembly of all control rods, including spares. We now have additional information that other types of control rod manufacturing defects have been identified.

The enclosed Directorate of Regulatory Operations Bulletin No. 73-5, "Manufacturing Defects in Boiling Water Reactor Control Rods," is sent to you to provide you with information we received from the General Electric Company, Millstone Point Company, Tennessee Valley Authority and Philadelphia Electric Company concerning control rods. This information may relate to the performance of certain equipment at your facility. Action requested on your part is identified in Section B of the bulletin.

Very truly yours,

James G. Keppler
Regional Director

Enclosure:
RO Bulletin No. 73-5

bcc: DR Central Files
RO Files
PDR
Local PDR
NSIC
DTIE
OGC, Beth, P-506A

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MANUFACTURING DEFECTS IN BOILING WATER REACTOR CONTROL RODS

We recently received information that control rods scheduled to be installed in certain boiling water reactors contained absorber tubes installed in an inverted position and certain other types of manufacturing defects. Pertinent details on this problem are contained in Section A below. Action requested by this bulletin is contained in Section B.

A. Description of Problem

While performing repairs of manufacturing defects on control rods returned to the General Electric Company's manufacturing facility at Wilmington, North Carolina, it was discovered that some of the control rod neutron absorber tubes had been installed in an inverted condition. Subsequent information received from the General Electric Company indicates that the problem of inverted absorber tubes is widespread and all control rods manufactured at the Wilmington, North Carolina site are suspect. The control rods in which this problem was discovered had originally been returned from a reactor site to the manufacturing site for inspection and repair of other types of defects (listed below) that were identified at the Millstone 1 facility in January of 1973.

At the time the most recent problem was identified, control rods from several boiling water reactors had been inspected to determine if they contained defects of the types noted at Millstone 1, repaired, and returned to the reactor sites without noting the inverted absorber tube problem. Two facilities in this category were Peach Bottom 2 and Browns Ferry 1. Inspections of control rods for these two facilities were performed at the reactor sites and approximately 30 percent of the total number of control rods were found to contain inverted absorber tubes or inverted sheaths (each containing 21 absorber tubes). Subsequent shipments of control rods from the manufacturing site, provided as replacements for the control rods containing inverted absorber tubes and sheaths, were inspected upon arrival at these sites and found to contain additional manufacturing defects of the types listed below:

Types of Control Rod Defects or Deficiencies Identified at Peach Bottom 2 and Browns Ferry 1

1. Bent and bulged sheaths
2. Cracking in velocity limiter

3. Improper operation and alignment of unlocking handle
4. Failure to chamfer velocity limiter casting at juncture point to sheath
5. Tack weld missing on coupling handle and unlatch track
6. Inspectors stamp not present on sheath
7. Velocity limiter roller bearing frozen
8. Improper axial clearance of absorber tubes within sheaths

Types of Control Rod Defects or Deficiencies Identified at Millstone 1^{1/}

1. Improper setting of coupling lock plug height
2. Improper extension of lock plug shaft above nut
3. Improper axial clearance of absorber tubes within sheaths
4. Failure to chamfer velocity limiter casting at juncture point to sheath
5. Improper spot welds at end of sheath and on unlocking handle cover strips
6. Improper tack welds in coupling locking shaft to nut, nut to handle, and valve to handle
7. Restrictions preventing free operation of uncoupling handle
8. Improper height of crowns of socket attachment weld

B. Action Requested of the Licensee

It is requested that you develop and implement an inspection program at the reactor site to examine each of the control rods received at your facility. The inspection program should include appropriate measurements and tests to verify that your control rods are properly manufactured and do not contain defects of the types identified at the Millstone 1 facility in January 1973, defects of the types recently identified at the Peach Bottom 2 and Browns Ferry 1 facilities, inverted absorber tubes or missing absorber tubes.

^{1/} Letter from A. P. Bray, General Electric Company to Mr. F. E. Kruesi, Director of Regulatory Operations, USAEC, dated April 26, 1973.

Within 30 days of your receipt of this bulletin, a written report should be submitted to the Region III Regulatory Operations Office with a copy to Mr. B. H. Grier, Assistant Director for Construction and Operation, Directorate of Regulatory Operations, USAEC, Washington, D. C., 20545, providing a description of your inspection program and your schedule for conducting this program.

Within 30 days of completion of your inspection program, a written report should be submitted to the same addressees listed above providing the inspection results. Please include in this response, a description of the corrective actions taken or planned and the date of scheduled completion of your corrective actions.

If similar or other defects with your control rods are identified, they should be promptly reported to the Region III Office by telephone.

If information has previously been submitted to the AEC on this subject that you wish to use to satisfy any portion of the requested information, please include appropriate references in your reply.