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Dr. Dixy Lee Ray, Chairman,
Atomic Energy Commission
Washington, D.C. 20545

31st December 1973

Dear Dr. Ray,

As a writer who has followed the intricacies of the AEC and the nuclear power business with some interest, I find the present situation at Midland, Mich., most confusing and hope you can help me to understand just what's going on out there.

What seems especially mysterious is the way that quality assurances are being investigated and judged. It seems that "special" inspections were held there on the 6th of this month, allowing the AEC to announce that cadwelding operations could proceed despite the show-cause order to halt all other construction. At the request of the local Congressman, Rep. Cederberg, a meeting with AEC officials was arranged for local bankers and businessmen; there the 6th December inspections were cited as grounds for assurances that all construction could be expected to continue. Mr. Muntzing says there was no Congressional intervention in setting up this meeting, but the Detroit press has carried a story stating there was.

If I had a more conspiratorial nature I might be led to assume that the AEC (using criteria it has yet to explain) has decided that construction should continue at the plant, and the public be damned. That's certainly what it looks like from the limited information now available to me. Perhaps you or an assistant could spell out, in simple terms, just how quality assurance is being judged at the Midland facility. As the only plant where a show-cause order for q.a. has been issued I thought it would serve as a good example of how careful and thorough the AEC's licensing procedures are -- in contrast to what some of your more vocal critics insist. But the more I look at Midland, the more I'm led to conclude that it serves as a good example of the sort of corner-cutting and administrative legerdemain your critics charge. Any help in understanding the Midland situation would be most heartily appreciated.

Yours sincerely,

William J. Lanouette

William J. Lanouette
Staff Writer

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Date 1/8/74
Time 1130

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AEC SECRETARIAT

TO: ☐ COMMISSIONER _____ DATE: 1/7/74
☐ GEN. MANAGER ☐ GEN. COUNSEL ☐ INFO. SERVICES
☒ DIR. REGULATION ☐ PLAN. & ANAL. ☐ SECRETARY
☐ _____

INCOMING FROM: William J. Lanouette
The Natiunal Observer
Dow Jones & Company, Inc.

DATE: 31st December 1973

SUBJECT: Re present situation at Midland, Mich.

☐ PREPARE REPLY FOR SIGNATURE OF:
- ☐ CHAIRMAN
- ☐ COMMISSIONER
- ☐ GM, DR, GC, PA, IS, SECY
- ☐ SIGNATURE BLOCK OMITTED

☐ PLEASE RETURN ORIGINAL WITH RESPONSE

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- ☐ SECRETARY

☐ FOR APPROPRIATE ACTION
☐ FOR INFORMATION
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REMARKS: _____

FOR THE COMMISSION: W. B. Kerr

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APPENDIX 3B

SPLICING REINFORCING BAR USING THE CADWELD PROCESS IN CONTAINMENT VESSEL INTERNAL STRUCTURES

1 SCOPE

These procedures cover the mechanical splicing of deformed concrete reinforcing bar for full tensile loading. The average tensile strength of the splices is equal to or greater than the specified minimum tensile strength of the rebar. The minimum acceptable tensile strength of any splices is 125 percent of the specified minimum yield strength for the particular bar size and ASTM specification.

2 RECORDS

Adequate records are maintained of all splices made by the Cadweld Process for "T" series connections. Records include splice location, splicing crew and material used.

3 QUALIFICATIONS OF OPERATORS

Prior to the production splicing of reinforcing bars, each operator or crew, including the foreman or supervisor for that crew, prepares and tests a joint for each of the positions used in production work. These splices are made and tested in strict accordance with this procedure. The completed splices must meet the acceptance standards of Paragraph 6.0 for workmanship, visual quality and minimum tensile strength. A list containing the names of qualified operators and their qualification test results is maintained at the job site.

4 PROCEDURE

All joints are made in accordance with the manufacturer's instruction sheets, "Rebar Instructions for Vertical Column Joints," plus the following requirements:

a. A manufacturer's representative, experienced in Cadweld splicing of reinforcing bar, was present at the jobsite at the outset of the work to demonstrate the equipment and techniques used for making quality splices. He also was present for at least the first 50 production splices and observed and verified that the equipment was used correctly and that quality splices were obtained.

b. The splice sleeves, exothermic powder, and graphite molds are stored in a clean dry area with adequate protection from the elements to prevent absorption of moisture.

c. Each splice sleeve is visually examined immediately prior to use to insure the absence of rust and other foreign material on the I.D. surface. [redacted] 197

d. The graphite molds are preheated with an oxyacetylene or propane torch to drive off moisture at the beginning of each shift when the molds are cold or when a new mold is used.

e. Bar ends which are spliced are power brushed to remove rust, concrete and other foreign material. Prior to power brushing all water, grease and paint is removed by heating the bar ends with an oxacetylene or propane torch.

f. A permanent line is marked 12 inches back from the end of each bar for a reference point to confirm that the bar ends are properly centered in the splice sleeve.

g. Immediately before the splice sleeve is placed into final position, the previously cleaned bar ends are preheated with an oxacetylene or propane torch to insure complete absence of moisture.

h. Special attention is given to maintaining the alignment of sleeve and guide tube to insure a proper fill.

i. When the temperature is below freezing or the relative humidity is above 65 percent, the splice sleeve are externally preheated with an oxacetylene or propane torch after all materials and equipment are in position.

j. Splice sleeves are wrapped in a special rust inhibiting paper. Sleeves are not unwrapped until they are used in the joining procedure.

5 TESTING

All completed splices are visually inspected at both ends of the splice sleeve and at the tap hole in the center of the splice sleeve. For purposes of quality control, production splices representing the work of each splicing crew are tensile tested for each position, bar size and grade of bar. The number and frequency of tests for each splicing crew is as follows:

a. One out of the first lot of ten splices for each position, bar size and grade of bar.

b. Two out of the next and subsequent lots of one hundred splices for each position, bar size and grade of bar.

The first five tensile test specimens are made by cutting out randomly selected production splices. Thereafter, at least one of every twenty tensile tests is made from production splices. At least one tensile test specimen is cut out from the actual production splice for each position, bar size and grade of bar. The remainder of the required tensile tests is made from three feet long test bars spliced in sequence with and in an otherwise identical manner as the production splices.

6 ACCEPTANCE STANDARDS

Sound, nonporous filler metal is visible at both ends of the splice sleeve and at the tap hole in the center of the splice sleeve. Filler metal is usually recessed 1/4 inch from the end of the sleeve due to the packing material, and is not considered a poor fill.

Splices which contain slag or porous metal in the riser, tap hole, or at the ends of the sleeves (general porosity) are rejected. A single shrinkage bubble present below the riser is not detrimental and should be distinguished from general porosity as described above.

There is evidence of filler material between the sleeve and the bar for the full 360 degrees; however, the splice sleeves need not be exactly concentric or axially aligned with the bars.

The Cadweld splices, both horizontal and vertical, may contain voids at either or both ends of the Cadweld splice sleeve. At the end of the Cadweld splice sleeves, the acceptable size void for an 18S splice does not exceed three (3) square inches per end of splice sleeve. The area of the void is assumed to be the circumferential length as measured at the inside face of the sleeve times the maximum depth of wire probe minus 3/16".

The average tensile strength of the Cadweld joints is equal to or greater than the minimum tensile strength for the particular grade of reinforcing steel as specified in the appropriate ASTM standard. The minimum strength of the Cadweld joints is equal to or greater than 125 percent of the specified minimum yield strength for the particular bar.

7 REPAIRS

Splices which do not meet the visual quality acceptance standards of Paragraph 6.0 are rejected and completely removed. The bars are then rejointed with a new splice made in accordance with these procedures.

No failures of Cadweld splices below the required minimum tensile strength are expected; however, in the unlikely event that one should occur it is sent to an independent testing laboratory for analysis of failure. Based on the Test Lab's report, additional samples are taken to ensure that there are no other defective welds.

8 MARGIN OF SAFETY

The average margin of reserve strength that exists over and above 125 percent of the specified minimum yield strength of a particular bar size has been determined to be 37 percent. This value was obtained from actual test data. 6

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