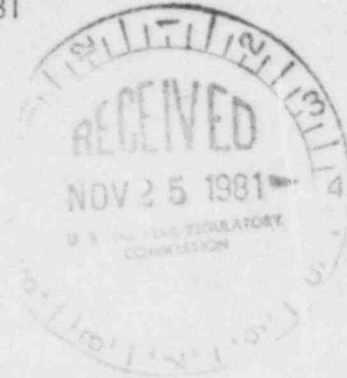


November 13, 1981



Lanny Sinkin, Esquire
2207-D Nueces
Austin, Texas 78705

Dear Mr. Sinkin:

This is in response to your letter, dated September 2, 1981, to Mr. Richard Herr of this office. Your request for investigative action dealt with apparent weld discrepancies on structural steel received from American Bridge at the South Texas Nuclear site. The following information on this subject was obtained from the licensee and from our NRC inspectors. The specific questions in your letter have been rearranged and are being answered in generic groups to avoid redundancy.

Houston Lighting and Power (HL&P) originally identified the problem of nonconforming weld conditions and on January 8, 1981, reported these to the NRC, Region IV office in accordance with 10 CFR 50.55(e). Interim reports were issued by HL&P on February 6 and June 1, 1981, stating licensee actions taken and giving status updates.

Your questions 1, 2, and 5 make references to arc strikes and weld splatter referring to these as flaws and defects. On certain steels, arc strikes present a definite problem. High alloy steel and certain stainless steels are very susceptible to cracking in the area of arc strikes. The columns, beams, and trusses, which are the subject of your concern, are manufactured from steel produced in accordance with Specification ASME SA-36 (identical with ASTM A-36-75). This is a general purpose steel commonly ordered for structural applications because of the ease with which it can be worked and its ability to maintain its properties through fabrication without special treatment. SA-36 material is a very "forgiving" steel, and isolated arc strikes do not present a significant problem. The arc strikes in question should be referred to as "anomalies" or "discrepancies" as opposed to "flaws" or "defects" which are normally used with the connotation that failure is likely to result. For SA-36 material, arc strikes and weld splatter are not considered detrimental unless they are extensive. The concern with extensive arc strike and weld splatter is that the material deposited on the metal surface may not be tightly adhering and could adversely affect subsequent coatings application. In the case of the American Bridge structural steel, all of the structures and shapes have been sandblasted and at least one prime coat of paint has been applied. It is reasonable to assume that any extraneous material remaining on the steel after a sandblasting operation is tightly adhering and does not present a future problem to coating integrity.

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DATE	11/5/81	11/17/81	11/10/81	11/10/81	11/10/81	11/10/81	11/13/81	

Your questions 1, 2, 3, and 6 make reference to inspection and surveillance activities associated with the American Bridge structural steel. No records are available on site of the actual inspections performed by American Bridge prior to shipment of the steel fabrications. The steel was ordered to comply with Specification 3A010SS012-G which allows the use of the latest American Welding Society (AWS) Code. The purchase order was issued when the latest AWS Code was the 1976 version. The various committees, which author the AWS Code, are constantly refining and updating it to keep it in accord with state-of-the-art changes and current industry practices. It has been determined by these committees that earlier versions of the Code placed very strict limits on the acceptance of certain weld irregularities. Engineering analyses of these conditions revealed that removal and/or rewelding was expensive and time consuming and that the conditions, if not removed, presented no appreciable loss of strength in the welds. AWS Code versions since 1976 have relaxed the requirements for certain weld conditions. The results of inspections performed in accordance with later versions of the AWS Code can vary greatly from those using the 1976 requirements for acceptance. Since Specification 3A010SS012-G allows the use of the latest AWS Code version, HL&P is currently in the process of requesting a change to their Safety Analysis Report to incorporate the use of the latest Code revision for all AWS welding.

A group of three welding consultants, including two current Code committee members, has been retained by HL&P to independently inspect and evaluate the discrepancies noted on the American Bridge steel structures. This inspection was performed on April 22, 1981, with the requirements and intent of the 1981 AWS Code as acceptance criteria. The results of this random inspection indicate that on-site examinations were conducted in a manner not in accord with the updated requirements. The recommendation of the three consultants is to reinspect all areas presently marked for corrective work. It is the consensus of this panel that the use of the 1981 AWS Code for acceptance would eliminate at least 90% of the conditions marked for rework without compromising the structural integrity of the beams, columns, and trusses.

If previous Brown & Root (B&R) inspections had been performed to the present acceptance criteria, the 995 NCRs issued for these structures through August 1, 1981, would probably have been reduced by about 90%. From this it can be seen that if the original American Bridge inspections and B&R surveillances had been conducted in accordance with the 1981 Code version very few questions would have existed concerning weld integrity or the relevant inspection and surveillance programs. The NRC inspector, who is cognizant of this situation, examined approximately 100 welds in the storage yard and 500 welds on beams and columns already installed in the upper portions of Mechanical Electrical Auxiliary Building No. 1 and Fuel Handling Building No. 1. Due to the location of the installed roof beams, it was not practical to accurately tabulate the conditions

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noted, but it appeared to the NRC inspector that welds on the installed beams were similar to those in the storage yard. All of the discrepancies on installed and stored beams were identical in nature and severity. B&R has finished a comprehensive program of reinspection for 1000 beams, columns, and trusses, but the results have not been compiled and analyzed. The number of welds to be included in the reinspection report will far exceed 1000 as each structural member includes a varying number of welds. The NRC will review the results of this reinspection and will monitor the resultant follow-up activities.

Your question 4 is in reference to the number of NCRs written on the steel already installed. During the reinspection program, approximately 995 NCRs were written to document deficiencies noted on American Bridge steel, 268 of which applied directly to steel already installed. Of the 1000 beams inspected, 270 had been installed. A comparison of the total number of inspections (1000) with the total number of NCRs (995) and the installed beams inspected (270) with the number of NCRs against them (268) leads to the conclusion that essentially identical conditions exist. This comparison also indicates that the inspection and acceptance criteria were the same for both phases of the reinspection.

Your question 7 asked if the management responses to this problem have been appropriate. This office was notified in a timely manner of the existence of a potential construction deficiency in accordance with 10 CFR 50.55(e). As was mentioned, two subsequent interim reports have been issued updating the actions taken. Management also retained the services of three welding engineers to act as an independent evaluation panel to assess the implementation and results of the re-examination program. The recommendations of this panel, two of whom are active AWS committee members, are contained in a letter, dated April 23, 1981, addressed to Mr. J. R. Geurts. The Region IV office feels that the B&R and HL&P management responses to date have been appropriate.

We trust that this answers the questions that you have in regard to the American Bridge structural steel welds at the South Texas Project.

Sincerely,

Original signed by
John T. Collins

John T. Collins
 Regional Administrator

bcc to DMB for dist.
 IE File ASLB
 LPDR
 NRC PDR
 NSIC
 NTIS

bcc dist. by RIV
 Texas Dept. of Health Resources
 RRI-South Texas C.Wisner
 Ed Reese G.Madsen
 Dudley Thompson J.Collins
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