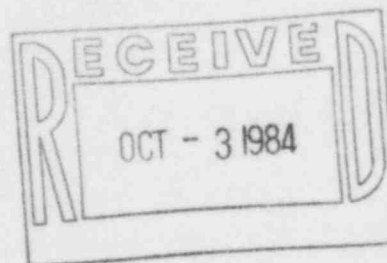


The Light company

Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

September 28, 1984
ST-HL-AE-1135
File Number: G12.195

Mr. John T. Collins
Regional Administrator, Region IV
Nuclear Regulatory Commission
611 Ryan Plaza Dr., Suite 1000
Arlington, Texas 76012



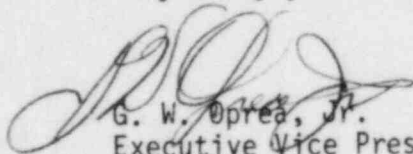
Dear Mr. Collins:

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Second Interim Report Concerning
Commingling of Round Rod Materials

On April 30, 1984, Houston Lighting & Power Company (HL&P), pursuant to 10CFR50.55(e), notified your office of an item concerning commingling of round rod materials. Please find attached the second interim report concerning this item. The next report will be provided by February 28, 1985.

If you have any questions, please contact Mr. Michael E. Powell at (713) 993-1328.

Very truly yours,


G. W. Oprea, Jr.
Executive Vice President

MEP/mg

Attachment: Second Interim Report Concerning
Commingling of Round Rod Materials

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cc:

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South Texas Project
Units 1 & 2
Second Interim Report Concerning
Commingling of Round Rod Materials

I. Summary

Material Control Procedures in effect prior to May 21, 1984 prescribed the marking of bulk material by color coding and ribbon striping as a means of identification. Inspections of material at the fabricating shop storage area, performed in April, 1984, pursuant to the discovery of incorrectly marked round rod specimens delivered to an independent testing laboratory, revealed improperly marked rods at the STP. This finding indicated a problem of commingling of ASTM A36 and ASTM A193 material restricted to the period when the rod material identity was exclusively controlled by the color coding and ribbon striping procedures.

II. Description

Material Control Procedures in effect from March 14, 1983 to May 21, 1984 prescribed that safety-related ASTM A193 round rods be color coded red-gray with a ribbon stripe identifying A193 painted continuously along one side. Safety-related ASTM A36 rods were to be color coded the same red-gray color, but without a ribbon stripe. On April 27, 1984 an initial inspection performed at the fabricating shop storage area revealed several 1-inch diameter rods with a stamped heat code known to be A193 material but without the prescribed ribbon stripe.

On April 28, 1984 a comprehensive testing program utilizing the Texas Nuclear Alloy Analyzer (TNAA) was initiated in order to determine the extent of the commingling revealed by the isolated incident. Additional A36/A193 material commingling was determined to exist within various rod diameters. The problems found consisted of A36 rods incorrectly ribbon striped as A193, as well as A193 rods without the required ribbon stripe. The rod stock has been retested with the TNAA to verify the material identity. The retested stock included (1) the previously disbursed material that the Constructor had not used and was subsequently recalled to the warehouse and (2) the material not yet issued from the warehouse. These activities were performed pursuant to the dispositions for NCRs BS-196 and BS-197.

The commingling problem is limited to rod material used for field-fabricated anchor bolts and embed plates with welded anchor rods, manufactured during the above period when for purposes of material control the identification of material was indicated by color coding and ribbon striping.

III. Corrective Action

The following measures, to define the previously field-fabricated components that are susceptible to the material commingling and to preclude further installation of such components, have been initiated.

1.0 Embed plates with welded anchor rods required to be A36

The embed plates of this type which were fabricated by Ebasco either from Brown & Root (B&R)-leftover or from Bechtel-furnished bulk material and are therefore susceptible to the commingling problem are distinguishable from shop-fabricated and B&R-fabricated plates as follows:

- (a) On the exposed exterior face an Ebasco identifier is painted on the Ebasco plates.
- (b) The Vendor or B&R identifiers, which are die stamped on the exposed exterior face, are non-existent on the Ebasco plates.

Accordingly, all plates which exhibit the Ebasco painted on identifier or which, after final painting, do not exhibit any die-stamped Vendor or B&R identifier, will be defined as field-fabricated (F-F) plates susceptible to the rod material commingling problem and will be processed as follows:

- 1.1 Ebasco field-fabricated (F-F) plates which are not installed are being subjected to 100% testing of their welded anchor rods to verify A36 rod material by TNAA. The execution of this verification testing is an ongoing activity in accordance with the disposition of NCR BS-197.

The plates which are verified by test to have A36 rods are not being actually marked to indicate Approved Field-Fabricated (AFF) plates, as previously stated in the first report. Nevertheless, the current practice, as implemented by the Constructor pursuant to NCR BS-197, achieves the same objective as follows:

- All plates for each forthcoming concrete placement are inspected to identify the Ebasco field-fabricated (F-F) plates.
- All F-F plates for each concrete placement are required to have all of their welded anchors verified to be A36 material by the TNAA.
- The testing is prior to concrete placement, but may be performed prior to or after installation of the plates, as determined by the Constructor and the stage of construction.
- The TNAA test data sheet for each F-F plate, documenting that material for all of the anchor rods welded to the F-F plate has been verified to be A36, is required to be attached to the concrete inspection report issued by QC prior to concrete placement.
- Any plates identified to have A193 welded rods are rejected.

- 1.2 All plates which are installed in concrete forms and/or reinforcing, awaiting a concrete placement, are being visually inspected to identify F-F plates. All of the F-F plates subject to commingling will be scrutinized as described in Item 1.1, prior to concrete placement.
- 1.3 The structural load capacity that results when heat-treated, high-strength A193 rod is welded to A36 plate inadvertently utilizing welding procedures intended for A36 material, is being evaluated through a testing program by Bechtel and a consultant. The previously installed (i.e. Ebasco) F-F embed plates will be accepted if the resultant load capacity for A193 weldments is established to be adequate to replace the A36 welded rods originally specified. Otherwise, if the resultant load capacity is not sufficient, the embed plates installed in concrete placements made after March 14, 1983 will undergo visual examination, if accessible, to identify installed F-F plates. Such identified plates, as well as unidentified inaccessible plates, will be subject to a specific analytical evaluation in order to justify or reject their use. The evaluation will consider the resultant available load capacity of A193 weldments with respect to the actual required design loads and /or specific function of each plate. Any embed which does not have sufficient load capacity with respect to required design loads and/or specific function will be repaired, replaced or abandoned.

2.0 Anchor bolts specified by design drawing as A193

For the concrete placements made after March 14, 1983 the anchor bolts specified by drawings to be A193 will be identified on drawings and physically at the installed locations. All such bolts which are required for safety-related applications will be tested with the TNAA to verify A193 material. Any anchor bolts found to be A36 instead of the specified high strength A193 material, and any inaccessible anchor bolts will be subject to a specific evaluation. The evaluation will consider the actual required design loads and/or specific function associated with the individual bolts in order to justify or reject the use of the lower strength A36 material.

For all ongoing and future concrete placements, the field fabricated A193 anchor bolts will be subject to verification of A193 material by TNAA testing prior to installation. This verification is restricted to bolts fabricated during the period when rod material identification was being performed by color coding and ribbon striping, and the verification activities will no longer be required when the inventory of bolts to be installed consists exclusively of bolts pretested by TNAA for material identity and/or bolts hard-marked in accordance with the revised material control program.

3.0 Anchor bolts specified by design drawings as A36

Normally the inadvertent substitution of A193 rod for A36 rod is inconsequential since the A193 material is of higher strength and is not degraded by the cold work involved in the fabrication of some types of

A36 anchor bolts. The only concern arises when the design requires or allows welding onto the A36 bolts, and the potential exists for the anchor bolts to be A193 material instead. Accordingly, when field welding to an existing embedded anchor bolt is permitted by a design drawing or other design disclosure document, the anchor bolt material will be verified prior to welding to be A36 or other weldable material.

For the specific cases where welding to anchor bolts was performed prior to the imposition of the above requirement and/or the corresponding bolt material verification is not documented, the implications of the available load capacity for A193 weldments will be considered in the design and actual loads applicable to the bolts. This analytical verification will not be implemented if the installed and welded anchor bolts can be accessed for material testing by TNAA. The investigation to determine the available load capacity for A193 weldments performed using welding procedures for A36 material is currently in progress.

IV. Recurrence Control

The first step of the recurrence control program was to recall to the warehouse all of the suspect rod stock material previously disbursed to the Constructor. Next the recalled material as well as all of the rod material at the warehouse underwent material identity verification by means of TNAA testing. Then, all of the material documented and/or identified as A193 was collected and segregated away from the warehouse at a remote location designated for surplus non-consumable material. This location is separated by fencing from the construction and laydown areas, and extraction of materials from this location is restricted by administrative control.

In addition, the following changes have been made:

- 1) As indicated in our letter of February 21, 1984 (ST-HL-AE-1060) from Mr. G. W. Oprea, Jr. to Mr. John T. Collins, no anchor bolts or threaded embed rods are now being fabricated at the STP site.
- 2) As indicated in our letter referenced in (1) above, improvements have been made to the STP material control program. Specifically, anchor bolts and embeds are hard-marked (stamped) as part of the User Testing Program to indicate material type separate from the color coding process. (See our letter of July 30, 1984, ST-HL-AE-1110 from Mr. G. W. Oprea, Jr. to Mr. John T. Collins.) QC utilizes the hard marking in carrying out its responsibilities to verify material correctness.
- 3) As indicated in our letter referenced in (1) above, procedures now require that whenever a design change requires field welding to an existing embedded anchor bolt, the bolt material will be verified to be weldable.

V. Safety Analysis

A safety analysis is in progress and will be provided in the final report.