U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

(This report contains investigative information in paragraph 9)

Report No. 50-458/80-13

Docket No. 50-458 Category A2

Licensee: Gulf States Utilities
Post Office Box 2951
Beaumont, Texas 77704

Facility Name: River Bend, Unit No. 1

Inspection at: River Bend Site

Inspection conducted: November and December 1980

Inspector: for A. B. Beach, Resident Reactor Inspector, Projects Section — Date 2/6/81

Approved: W. A. Crossman, Chief, Projects Section — Date 2/6/81

Inspection Summary:

Inspection During November and December 1980 (Report No. 50-458/80-13)
Areas Inspected: Routine, announced inspection by the Resident Reactor Inspector (RRI) including follow up to previous inspection findings; mechanical equipment installation; welding and safety-related piping installation; electrical equipment and cable installation; structural steel erection; and concrete placement activities; allegations involving an electrical welder's qualification and allegations involving concrete placement activities were investigated. The inspection involved one-hundred forty inspector hours by one NRC inspector. Thirty-two inspector-hours were involved in the investigation effort performed as a result of the allegations.
Results: Of the six major areas inspected, no violations or deviations were identified in five areas, one violation was identified in the concreting area (violation - failure to follow procedures to maintain uniform consistency of concrete at the point of placement - paragraph 8).

DETAILS

1. Persons Contacted

Principal Licensee Employees

*T. C. Crouse, Director, Quality Assurance
*P. D. Graham, Supervisor, Quality Assurance
*R. B. Stafford, Supervisor, Quality Assurance
K. C. Hodges, QA Engineer
R. R. Doggart, QA Engineer
C. L. Ballard, QA Engineer
E. A. Troncelliti, QA Engineer
*J. E. Wimberly, Superintendent, Site Construction
J. R. Dunkelberg, Assistant Superintendent, Site Construction
J. W. Leavins, Director, Site Engineering

Stone and Webster Personnel

*C. D. Lundin, Manager, Project Quality Assurance
*R. L. Spence, Superintendent, Field Quality Control
*J. D. Davis, Assistant Superintendent, FQC
*W. I. Clifford, Resident Manager
*A. Kamdor, Resident Engineer
K. E. Conrad, QA Engineer
J. J. Zullo, QA Engineer
*G. M. Byrnes, Assistant Superintendent, FQC

Other Personnel

R. C. Wheeler, National Mobile, Quality Assurance

The RRI also interviewed other licensee and other Stone and Webster personnel during this inspection period.

*Denotes those persons with whom the RRI held on-site management meetings during the inspection period.

2. Action on Previous Inspection Findings

(Open) Unresolved Item (50-458/79-03): Concrete Mix Design - Water Acceptance Criteria. This will be closed pending regional review of specification acceptance criteria for water used in the concrete mixes.

(Open) Infraction (50-458/79-04): Failure to Control Ordering of Safety-Related Concrete. This item will be closed pending regional review of National Mobile's training records performed in accordance with the licensee's response to the citation.

(Closed) Infraction (50-458/79-05): Failure to Provide Timely Notification of Construction Deficiencies. As a result of the licensee's performance during the past year in reporting deficiencies, this item is considered closed.

(Closed) Unresolved Item (50-458/79-05): Mill Test Reports for Special Reinforcement No. 18 Bar. Specification requirements conform to ASTM A29; therefore, the values reviewed for the chemical analysis were within the allowable tolerances of the specification. This item is considered closed.

(Closed) Unresolved Item (50-458/80-02): Use of Telltale Devices. As a result of a GSU stop-work order and the use of alternative forming systems, excessive formwork movements for placements observed have essentially been eliminated. This item is considered closed.

(Open) Infraction (50-458/80-02): Failure to Perform and Failure to Identify Inadequate Aggregate Tests. Laboratory test forms are not being adequately monitored for accuracy and completeness as required. This infraction will remain open until proper corrective action has been performed.

(Open) Unresolved Item (50-458/80-02): Compliance with ASME Certification System Requirements. This item will remain open pending the results of the ASME site survey to be completed early this year.

(Closed) Infraction (50-458/80-07): Failure to Follow Procedural Requirements for Good Housekeeping. Several tours of the site by the RRI indicated that good housekeeping practices are being implemented. This item is considered closed.

(Closed) Deficiency (50-458/80-07): Inappropriate Accept/Reject Criteria for Total Air Content in an Exterior Wall Placement. A review of several placement records indicates this to be a one time deficiency. Proper corrective action has been taken in accordance with the licensee's response. This item is considered closed.

(Open) Infraction (50-458/80-06): Failure to Follow Procedures for Identification of Training Needs. This item remains open pending interviews with craft personnel concerning the adequacy and compatability of their training to the task to which they have been assigned.

(Open) Deviation (50-458/80-06): Use of Air Entrainment in Category I Concrete. This item remains open in that a review of selected concrete placement records indicates that the air entrainment limits are still somewhat below standard industry practice and concrete placeability problems still exist. Concrete placements are discussed in detail later in this report. This item remains open.

(Open) Infraction (50-458/80-05): Failure to Follow Site Procedures for Utilization of Qualified Inspection Personnel for the Performance of Site Inspection Activities. Stone and Webster, in a letter to Gulf States Utilities, in providing additional clarification to a previous response to this finding, stated, "Assistant technicians, technicians and trainees will perform in conjunction with a Level II or above. In this case, both will sign the test report as performing the test. The reports will then be reviewed and signed by a second Level II or above." During a review of concrete cylinder compressive strength reports, the RRI discovered that assistant technicians, technicians and trainees were signing the test reports either with no supervision by a Level II or with no review by a separate Level II. Discussions with licensee and contractor personnel revealed that the concrete cylinder compressive strength report caused confusion in that there was not adequate space to accommodate the appropriate signatures. The contractor stated the form would be revised, and immediately initiated retraining for all field quality control personnel. In conjunction, the licensee committed to a program to ensure all NRC findings are properly addressed and that proper corrective action has been performed. This is documented in a Stone and Webster letter, File No. G15.4.2, dated December 17, 1980. The RRI stated this item will remain open, as will all of the findings in NRC Inspection Report 50-458/80-05.

Six findings (2 Violations, 2 Deviations and 2 Unresolved Items) in Inspection Reports 50-458/80-07, 80-09 and 80-12 remain open for the 1980 calendar year pending review of the licensee's corrective action.

3. Site Tours

The RRI toured the safety-related plant areas several times weekly during the inspection period to observe the progress of construction and the general practices involved. One specific area reviewed by the RRI during these tours involved document control.

A GSU Surveillance Report, GSU QAFR No. 80-11-6-D, dated November 5, 1980, noted the following conditions:

a. "Lift drawings" which are being used for construction activities are not maintained and controlled as design documents.

b. Uncontrolled and "information only" (black on white) copies of N&Ds and E&DCRs are being employed by S&W Construction.

c. Controlled copies (black on green) and "information only" copies (black on white) are being filed together in uncontrolled binders in the work areas.

d. Controlled copies of design documents are being removed from the field stick files and associated binders, left unattended in "gang boxes" for indefinite periods of time and not returned to the stick files after use.

e. There is no established, documented method for control of documents which have been removed from the assigned stick file location.

Stone and Webster, in their response to this finding, C-RBS-01692, dated November 14, 1980, pointed out that "lift drawings" were not an engineering design document and were not to be used by either the construction department or the quality control department to verify correct construction. The "lift drawings" will, therefore, be classified as a control Level III document.

Drawing stations were purged of unauthorized documentation and procedures were to be revised to include all of the appropriate and aforementioned requirements. Training sessions were to be scheduled to instruct supervisory personnel in the requirements of design document user use control.

The licensee and his contractor issued a stop-work order on all Category I work December 30, 1980. This stop-work order resulted from the discovery that incoming drawings to the site had not been processed by Document Control since November 6, 1980, and the Document Control Cards had not been updated to reflect these missed drawings. Some 1,853 vendor drawings and 1,089 Stone and Webster drawings were involved; however, over 80% of these drawings pertain to work which has not yet started, and another 10% pertain to work previously identified by an Engineering Design and Change Request. Work is to resume on a case by case basis as drawings are up-dated to reflect the latest design revision.

However, CMP 11.1, Revision 0, "Jobsite Document Control," requires, in Section 5.5.3.(a), that only documents issued on green paper may be used by field forces for (to verify) actual construction. The RRI, from observations made in the field, could not be assured that field forces were verifying actual construction to the black on green drawings rather than to the "lift drawings."

Until the RRI can determine the actual construction practice of field verification to the official drawing (black on green drawing) and that Stone and Webster has performed proper and adequate corrective action in accordance with their response to the GSU finding, these items involving document control will be considered unresolved.

4. <u>Mechanical Equipment Installation</u>

At the time of this report, no mechanical equipment has been installed. However, RHR pump installation will begin early this year. Vendor

surveillance and specification reviews are now being performed. Approximately 90% of the NSSS equipment has now arrived on site. The RRI toured several storage areas during the inspection period.

No violations or deviations were identified.

5. Welding and Safety-Related Piping Installation

Shop fabrication of safety-related piping has been initiated. However, the site weld reject rate at this time is very high. In a December 17, 1980, letter to Stone and Webster, File No. 211,020, GSU "expects the reject rate to show significant improvement by January 15, 1981" (twenty-three of the first thirty radiographed safety-related welds were rejected). In addition, GSU directed Stone and Webster to develop and implement by January 30, 1981, a procedure that details the criteria for requiring the requalification of welders whose performance is questionable or unacceptable.

GSU also directed that "occurrences of procedure violations of a serious nature will be noticeably reduced" and "the trend by Stone and Webster engineering toward assigning "accept-as-is" dispositions to nonconformance reports will be tempered."

Although it is very early in the program, the RRI will closely review licensee management controls to ensure these types of occurrences are eliminated, and an acceptable weld reject rate is achieved.

No violations or deviations were identified.

6. Electrical Equipment and Cable Installation

a. Containment Electrical Penetrations

A preliminary review of the Stone and Webster Purchase Specification RBS-241.211-156, "Containment Electrical Penetrations," as manufactured by Conax Corporation was performed. The requirements of ASME, Section III, Code Class MC are to be implemented in accordance with the PSAR commitment.

No violations or deviations were identified.

b. 600 Volt Power and Control Cable

Insulated 600 volt power cable and fire resistant 600 volt control cable are being supplied by the Okonite Company. The applicable Stone and Webster contract specifications were reviewed by the RRI; Specification 141.234, Addendum 2 and Specification 241.240, Addendum 2, respectively. Preparations for fabrication of this cable are now being made.

A Stone and Webster audit of Okonite performed on June 17-19, 1980, placed a "hold" on the release for manufacturing due to a lack of in-process and final inspection by Okonite during the manufacturing process. This audit report, as well as the report of a reaudit performed on July 16-17, 1980, and the final corrective action response, dated October 8, 1980, were reviewed and were found to be in accordance with the applicable specification requirements.

However, as a result of the inability of the vendor to properly qualify "rework" cable, the licensee is evaluating the use of "rework-free" cable. Stone and Webster is currently evaluating the vendor QA program and the specification is being revised to incorporate these new requirments. No definite decision on what course of action will be taken has been made at the time of this report. Thus, the RRI is following this area closely to ensure properly qualified cable is used at the River Bend facility.

No violations or deviations were identified.

c. 5KV Power Cable

The RRI reviewed Specification 241.232, "Insulated 5KV and 15KV Power Cable." A September 9, 1980, letter from Stone and Webster to Anaconda Wire and Cable indicated that fabrication of the cable could proceed. During this review, the licensee informed the RRI that 15KV power cable had arrived on site. Although the insulated 15KV power cable has no Category I applications, the cable was fabricated and shipped in accordance with a Category I specification. Thus, Stone and Webster placed a "hold" on delivery of the 5KV cable until the specification is revised to reflect the appropriate test requirements of the 15KV and 5KV cables, as applicable.

In this regard, the RRI reviewed preliminary long-term physical aging tests evaluated using the Arrhenius technique. The RRI questioned the licensee and contractor as to the test points of the curve being used and the justification of the forty-year required service life of the cable. Until resolution of these problems is achieved, and until the RRI can assure proper qualification of the cable, this item involving qualification of Anaconda cable is considered to be unresolved.

7. Structural Steel Erection

Structural steel is being manufactured to the requirements in Stone and Webster Specification 210.310, , "Specification for Structural Steel." This includes welding requirements which are to be in accordance with AWS D1.1. The vendor is an approved vendor on the Stone and Webster approved vendor lists whose QA program is to be in accordance with the

eighteen criteria used in 10 CFR 50, Appendix B. A Certificate of Conformance is also required for all steel shipped to the jobsite indicating that the welding has been performed in accordance with the specification requirements.

On December 9, 1979, a GSU QA finding report (79-11-35-D) was initiated indicating that certain of the welds do not meet the AWS criteria. On December 18, 1979, a memorandum was issued by a GSU QA engineer that these welds "may constitute a situation sufficiently grave to require reporting to the USNRC under the guidelines set forth in 10 CFR 50.55(e)."

Stone and Webster responded to the December 18, 1979, memorandum in a separate letter dated April 14, 1980. They stated that the nonconforming welds were not reportable under 10 CFR 50.55(e) because:

1. No significant breakdown in the River Bend Quality Assurance program occurred.

2. No deficiencies exit in the final design released for construction.

3. No significant deficiencies were noted ... no extensive evaluation was required ... no extensive repair was required.

However, a review of several N&Ds, of some forty to fifty pages each, indicated considerable evaluation has been performed. In addition, 100% field inspection, after acceptance of the steel and prior to erection, was initiated by Stone and Webster to detect these nonconformances. A selective review by the RRI of two nonconformance reports on approximately sixty pieces of steel revealed approximately 75% of the welds were repaired to meet the AWS requirements, and 25% of the welds were accepts "as-is", and re-evaluated to reflect the shear and connection capacity of the "as-is" weld. Although all of these welds were generally minor deficiencies and could be considered not significant (i.e., maximum 1/16" undersize and 1/32" undercut), most of these deficiencies existed for the entire length of the weld. Cracks, lack of fusion, and overlap were noted, all indicative of poor workmanship to the AWS standard. It is also important to note that these welds were inspected in the field after the steel was galvanized.

The RRI agrees with the December 18, 1979, Stone and Webster reponse in that there was no significant breakdown in the River Bend Quality Assurance program. However, because of the considerable number of deficiencies and re-evaluation after galvanizing, the RRI does question the manufacturer's QA/QC program in regard to shop welding. A December 15, 1980, memorandum from the Reactor Construction and Engineering Support Branch to the USNRC Vendor Inspection Branch requests that they review the manufacturer's program to determine if there is a breakdown in his QA/QC program. Approximately 15% of the safety-related structural steel has been erected.

No violations or deviations were identified.

8. Concrete Placement Activities

The RRI observed several Category I concrete placements and reviewed numerous corresponding concrete placement records during the inspection period. The following placements are discussed in this section of the report:

AB5-W-83B4

AB4-W-93B5

AB5-W-83B3

ET20-S-67S2

RB3-W-80

CB7-W-115AG

RB3-W-90

RB2-W-89

CB8-M-98A3

PT1-M-70E1

SC4-W-85-9

CB7-W-115J2

CB7-W-11556

CB7-W-11552

Although the RRI observed that noticeable improvements in concrete placements had been achieved, especially since the management meeting held with the licensee in accordance with the Systematic Licensee Assessment Program (as documented by USNRC Inspection Report No. 50-458/80-10), similar concerns are again being addressed by the RRI. The paragraphs that follow attempt to identify these specific concerns.

Consistency, as defined by ACI Publication SP-19 (78), is the relative mobility or ability of freshly mixed concrete to flow. Consistency (slump) should be governed by placing conditions, and the design of the placement equipment should be designed to handle the specific mix. Design of the water-cement ratio, slump, air content, workability, and uniformity within the batch, as well as from batch-to-batch, must be maintained during the placement of quality concrete.

Consistency is important for quality concrete to help ensure proper concrete consolidation with proper vibration practices and to help prevent voids and honeycombing. However, placement records for placements AB5-W-83B4, AB4-W-93B5, AB5-W-83B3, ET20-S-67S2, and RB3-W-80 indicated that slumps of concrete as low as 1-1/4" were placed. No subsequent adjustments were made, neither to the concrete mix nor were any subsequent equipment modifications made. These placements were made in late September and early October where hot weather would not have a significant impact on placeability problems. (This is discussed in USNRC Inspection Report No. 50-458/80-07.)

These placements reveal that the practices, as recommended by ACI 304 (73), "Measuring, Mixing, Transporting, and Placing Concrete," are not being employed. During placements, specifically Section 9 of this Code points out that, it is impractical to pump concrete with less than a two inch slump. It further adds that good communication be maintained between field placement personnel and the batch plant.

ACI 304 (73), in Section 3, states, "that measurement of mixing water depends on accurately knowing the quantity and variation of moisture in the aggregate as it is batched. Uniformity in the measurement of total mixing water involves, in addition to the accurate weighing of added water, control of such additional water sources as mixer wash water, ice and free moisture in aggregates. A tolerance for accuracy in the measurement of total mixing water is that variation in water-cement ratio shall not exceed ± 0.02.

In conjunction, the RRI noted that the amount of water withheld from batch-to-batch varied in a very inconsistent manner after the control test (slump) had been taken. Placements AB5-W-83B4, CB7-W-115A6 and RB3-W-90 are three examples of placements where the amount of water withheld was substantially increased after the control test was performed, providing for an even lower consistency. For example, during placement RB3-W-90, a control test was performed with 21 gallons withheld from the truck mixer, obtaining a good 2-3/4" slump at the point of placement for the pumped concrete. Subsequent amounts of water withheld prior to performing another concrete control test were 30 gallons, 27 gallons, 29 gallons and 43 gallons, respectively.

Furthermore, ACI 304 (73), in Section 5.2, states that "a maximum elapsed time of 1-1/2 hour after the cement has entered the drum until completion of discharge is frequently specified." It further states that, "as long as the specified amount of mixing water is not exceeded, that the concrete has satisfactory plastic properties, and is of satisfactory consistency and homogeneity for satisfactory placement and correlation, the amount of revolutions on the drum or elapsed time need not be specified," as is the case by the River Bend specifications. ACI 301 (72), "Specification for Structural Concrete," states, "that concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients and in a manner which will assure the required quality of the concrete is maintained."

Placement RB3-W-90 indicated an average time of eighty-five minutes before compressive cylinder tests were made (one-half of a truck load has been discharged at this point in time). During placement PT1-M-70E1, Truck Ticket 12242 indicated tests were made after ninety minutes. Placement RP2-W-89 reveals a concrete placement initiated after some 150 revolutions, and with the majority of subsequent batch wasted because it was too dry.

Stone and Webster Specification 210.350, Revision 2, "Mixing and Delivering Concrete," requires, under "Delivery", that freshly mixed concrete shall be delivered to the point of placement in a thoroughly mixed, homogeneous condition, with uniform consistency from batch to batch. Stone and Webster Specification 210.370, Revision 5, "Placing Concrete and Reinforcing Steel," requires on page 1-62 that concrete placements shall conform to ACI 301, 304, 305, 306 and 318, unless otherwise specified.

Further review of concreting activities revealed that numerous control tests for slump were being performed in the field (for placement RP-2-W-89, as many as twelve trucks were slumped for a thirteen truck placement), but the information was not being utilized to achieve a good consistent mix from truck to truck. Stone and Webster Specification 210.361, Revision 1, "Concrete Testing Services," requires that except for the required frequency, slump test of concrete in delivery mix trucks may be waived when adding withheld water, provided the amount of water added does not exceed that of a previously tested and accepted concrete load of the same mix and size and having not had less than the same amount of withheld water added to similar concrete proportions. QAD-10.2, "Inspection of Batch Plant, Concrete, Reinforcing Steel, and Grout," implements these requirements. A review of placements CB7-W-115J2, SC4-W-859, RB3-W-80, FB3-W-90, CB7-W-11556, and CB7-W-11552 indicated that slumps were not performed in accordance with the required frequencies. In addition, the Stone and Webster Quality Assurance Inspection Plan, "Placing Concrete and Reinforcing Steel," Revision 5 conflicts with the Specification 210.361, in that it requires that the slump test shall be taken whenever the total amount of water withheld decreased by 1/2 gallon per cubic yard for a batch, since the previous accepted test.

The RRI discussed these concerns with licensee and contractor personnel and stated that proper action must be taken to correct these problems involving concreting activities and that they be corrected prior to placements involving warm weather environmental conditions. He emphasized that, in accordance with ACI 304, Section 4.9, the responsibility for the quality of concrete is divided between the supplier and the placing contractor who should, by close cooperation, institute proper job controls. However, assurance that proper control methods are used, rests finally with the QC inspector.

The above placements exemplify questionable concreting practices for good, quality concrete in accordance with delivery requirements and accepted ACI recommended practices and are considered to be examples of a violation in accordance with Criterion V of Appendix B to 10 CFR 50; i.e., failure to follow procedures to maintain uniform consistency at the point of placement in accordance with acceptable specification requirements for quality concrete. The licensee must address, in his response, how he will ensure that consistent, uniform, and good placeable concrete is maintained at the point of placement for Category I concreting activities.

9. Allegations

a. Allegation Regarding Welder Examination

The Region IV office received a telephone call about 12:30 p.m. on August 25, 1980, in regard to welder examinations at the site. The caller was concerned in that he heard statements made by a Stone and Webster employee involving "help" given to an individual to pass his qualifications tests.

The Section Chief of the Projects Sections and the RRI met with the individual making the allegation on the night of September 15, 1980. Subsequently, the weld records for the alleged individual were reviewed and no discrepancies could be determined.

The Stone and Webster employee who made the statements was interviewed by the RRI. The individual stated that he was not familiar with the imposed welding requirements nor was he very knowledgeable in this subject area. He stated that the "help" he referenced in his statement was practice time given the welder prior to performing the qualification weld. He knew of no actual assistance given the welder during the actual performance of the test.

The employee stated that a personality conflict existed between the welder and himself, and that he had made the statement in anger based upon the welder's productivity.

Since the allegation was made, the welder was terminated due to absenteeism.

This allegation could not be substantiated.

b. Anonymous Allegations

On September 10, 1980, at about 00:45 a.m., a call to the Region IV office was diverted to the Headquarters Duty Officer. The caller alleged that "things are going on there (River Bend) that are not being looked at, possibly." The anonymous caller alleged the following problems and the paragraphs which follow these allegation statements are a summary of the investigation effort performed by the RRI during this inspection period:

(1) Allegation

"Design document control needs to be looked into as they (Stone and Webster) are using uncontrolled documents in the field." Also, design changes are occurring so fast that construction work cannot be performed to the most current revision. He further stated that many times construction work has been completed, and the latest revision to the applicable drawing was not included as part of the completed work.

Results

At the time of this report, the RRI has not been able to substantiate this allegation, in that the work activities he has observed in the field have been performed to controlled documents incorporating the latest revision. The RRI could find no evidence of completed construction activities performed in accordance with drawings not reflecting the latest revision.

However, as referenced in paragraph 3 of this report, similar concerns relative to the construction verification program are being addressed as an unresolved item, and action will be taken after all of the necessary observations are performed and the results evaluated. Thus, at this time, this allegation cannot be substantiated.

(2) Allegation

"Stone and Webster does not care about curing." The individual stated that the first lift in the reactor shield wall was not properly cured. He further stated that many nonconformances are written against curing.

Results

In regards to the curing of the reactor shield wall, a GSU QA Finding Report (80-8-39-E) was written on August 30, 1980. It states that, "a surveillance of the placed concrete (5:20 a.m., 8/30/80) found the concrete to be dry." An acceptable response from Stone and Webster (C-RBS-01606, dated September 23, 1980) was received by the licensee. Verfication of the response was performed September 24, 1980.

On September 2, 1980, another GSU QA Finding Report (80-9-1-E) was initiated. Curing was monitored on the following placements:

AB6-W9353-1

RB3-W80

CB-M98-AG

ET7-W-80G3

SC5-W-85-3

Two unsatisfactory inspection reports were noted. The finding further states, "Additional unsatisfactory inspection reports indicate that the construction department needs additional training on the importance of proper curing techniques." An acceptable Stone and Webster response was received and construction has supplemented their curing practices by taking the following actions:

(a) Provide more positive direction to the night crews to leave placement under cure wet as possible.

(b) Install a soaker hose system where possible to maintain a continuous watering of placements. It was noted this system would not be advisable inside the reactor containment due to the excess water possible hindering Graver activity.

(c) Replace the plastic coated burlap with all cloth burlap on all vertical sides of placements.

(d) Start concrete curing activities at 5:00 a.m. each morning. It was noted that all curing activities presently continue during all Holiday periods.

This allegation was substantiated; however, the licensee had identified these problems prior to the time at which the allegation was received. Prompt and proper corrective action was taken in response to the problems identified.

(3) Allegation

Partially embedded rebar is often bent out of position, accidentally or deliberately, and must be realigned. Such work is being done without controlling procedures or inspection.

Results

Stone and Webster Specification 210.370, Revision 5, "Placing Concrete and Reinforcing Steel," requires the following:

> Bars partially embedded in set concrete, N9 or larger, shall be bent in accordance with the following rules:
>
> (a) Preheating may be applied in any manner which would not damage the bar material or the set concrete.

(b) The preheat shall be applied to the length of bar that shall equal five bar diameters each way from the center of the bend and shall not extend below the surface of the concrete. Temperature of the bar at the concrete surface shall not exceed 500°F.

(c) Preheat temperature applied shall be between 1100° - 1200°F.

(d) Preheat temperature shall be maintained until bending is completed.

(e) Temperature shall be measured by a temperature measurement crayon or contact pyrometer.

Bars of all sizes embedded in hardened concrete may be bent or straightened less than 10.0 degrees at ambient temperatures. Bars N3 to N8 may be cold bent once in any plane, and then straightened once to remove an inadvertent bend.

Bent bars N11 and larger, or smaller sized rebars with cracks or other defects which are partially embedd in hardened concrete, shall not be straightened but shall be cut square, approximately 90 degrees to the length of the rod. All sections of the bar containing any breaks, cracks, or splitting shall be removed. Whenever the projection of the bar is less than that permitted by ACI 318 or any more restrictive requirement on the Engineers' drawings, the bar shall be extended by either welding or Cadwelding using procedures specified herein. Welds to bars projecting from concrete shall not be less than 3 inches from the hardened concrete, and the closest end of a Cadweld sleeve shall not be less than 3 inches from the hardened concrete. This may require removing of the hardened concrete to obtain sufficient grip on the rebar. The purpose of this is to prevent splitting of the hardened concrete by the heat. If the temperature of the rebar as it enters the hardened concrete during splicing exceeds 500°F, either the length of the projection shall be increased or a heat sink shall be provided to reduce the rebar to this temperature at the face of the concrete.

For all other conditions, bending or straightening of rebar shall have the approval of the lead structural engineer.

Thus, there appears to be adequate procedural and inspection requirements.

This allegation cannot be substantiated.

(4) Allegations

Gulf States Utilities Quality Assurance personnel and Stone and Webster Quality Assurance personnel are not performing surveillances.

Results

Quality Assurance Procedure QAP 18.2, "QA Audit/Surveillance Planning Scheduling," delineates the responsibilities and defines the details to schedule surveillances performed to verify compliance with QA program requirements.

The RRI has observed numerous surveillances performed by the GSU QA personnel. In fact, several Quality Assurance findings have been noted in this report that were made as a result of surveillance performance. The RRI recommended, in discussions with licensee personnel, that they improve their visibility while carrying out their assigned tasks in the performance of surveillances so that all personnel involved would be aware of what they were doing.

At the time of this allegation, there was no requirement for Stone and Webster QA to perform surveillances.

This allegation cannot be substantiated.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. Two such items are discussed in paragraphs 3 and 6 and will be entitled, "Construction Verification Program," and "Qualification of Anaconda Cable," respectively, in future discussions of these matters.

11. Management Interviews

The RRI met with one or more of the persons identified in paragraph 1 on November 17, 20, 24, 27 and December 2, 10 and 18, 1980, to discuss various inspection findings and to discuss licensee actions and positions.