South Texas Project 1 & 2 Evaluation Period: 8/1/79 - 7/31/80

I. General

The licensee has taken positive action to correct areas of weakness identified by the NRC.

The licensee has changed the Houston Lighting and Power Company (HL&P) and Brown and Root (B&R) QA organizational structurP, adding a quality assurance (QA) engineering group to the site organization. Experienced personnel have been placed in key positions in HL&P and B&R management, engineering and QA organizations. Senior management has become sufficiently involved with site construction operations to be aware of problems and to better control the project. Extensive training has been accomplished from the worker level to the senior management level. A zero defects program is in place to emphasize a "quality first approach." Implementation of recommendations resulting from a Bechtel Audit, dated July 24, 1980, has resulted in an improved QA program in the following areas: (1) Procedures, (2) Documentation and Analysis of Defects, (3) Training and Qualification of Personnel, (4) System Controls, (5) Audit System, and (6) Management Involvement.

Region IV NRC inspectors, especially the RRI, have had daily contact with personnel from the Senior Management level down to the worker level. In general HL&P and B&R managers have demonstrated a very cooperative attitude relative to correcting any deficiencies identified and resolving conditions which might lead to violations of requirements, procedures, or commitments. Key senior management, who were convinced they had a very good program before receiving the Order to Show Cause and civil penalty, now recognize they fell into some pitfalls that were experienced by many other licensees in the early 1970s. Management appears to be determined to avoid similar pitfalls in the future. Key management personnel, who have had a great deal of experience at other nuclear sites, are confident that they can eliminate mistakes caused by the previous lack of experience in nuclear construction.

The RRI and other inspectors have had numerous contacts with workers, inspectors, supervisors and managers. The consensus has been that there is no problem now relative to QC inspectors being pressured, harassed, threatened and intimidated. The new QA/QC managers and supervisors now give adequate support to QC inspectors.

Region IV inspectors have reviewed the licensee's and contractor's corrective action relative to Category 1 structural backfill, safety-related concrete structures including embedments, welding and non-destructive examination and found the corrective action or implementation of commitments to be adequate.

II. Specific

(Contentions A through J below are examples of the more general contention, "The South Texas Project facility displayed evidence of management weaknesses in the areas of Quality Assurance and overall construction management."

A. Contention

"The licensee had not sufficiently implemented Quality Assurance and management controls."

1. Basis	References
During the period August 1, 1979 through July 31, 1980, 36 items of noncompliance were identified, 22 of which depicted inadequate implementation of direct management control.	IE Reports 50-498/499, 79-13, 79-14, 79-15, 79-16, 79-19, 79-20, 80-01, 80-05, & 80-07
Allegations of QA/QC program irregularities were substantiated during the evaluation period substantiated during the evaluation period.	IE Reports 50-498/499, 79-13, 79-19, 80-14, & 80-21
Significant civil/structural problems identified and reported to RIV by the licensee were in effect at the beginning of and during the evaluation period.	10/4/78 - Dimensional Error in Base Slab MEAB-2 6/18/79 - Voids Lift No. 8, RCB 1 2/4/80 - Nonconforming Backfill Material Unit - 2 2/7/80 - RCB 2 Liner Bulge 3/12/80 - Rejectable Indications in RT of ECW Piping 3/12/80 - Voids Under Cross-over Leg Embedments Unit 1 6/4/80 - Breakdown in QA Program for Concrete Placement CI1-W90 (Unit 1)

6/5/80 - Excessive Lift Thickness of Concrete Placement DG1-W3A (EDG Building)

6/13/80 - Breakdown in QA Program Procurement Cycle of Purchased Materials

6/20/80 - Minimum/Maximum Soil Density Tests on ECW Piping Backfill Material

Two Immediate Action Letters (IAL) involving stop-work were in effect or issued during the evaluation period in regard to placement of safety-related concrete and ASME & AWS welding. These stop-work orders, issued by the licensee were a result of NRC's concerns in regard to voids in the Unit 1 Reactor Containment Building shell wall, qualification of welding procedures and improper welding activities.

IAL 6/22/79, 6/29/79 & 12/31/79
IAL 4/17/80, 6/10/80 & 7/17/80

2. NRC Action

A special investigative effort conducted over the period of November 10, 1979 to February 7, 1980, concluded that procedural and programmatic inadequacies in the HL&P and B&R organizations resulted in failure to systematically identify quality problems and failure to routinely correct and prevent recurrence of identified problems.

IE Report 50-498/499, 79-19

Meetings were held with the licensee on December 28, 1979 and January 24, 1980 to discuss the investigation findings. On April 30, 1980, the licensee was issued a Civil Penalty and an Order to Show Cause. The licensee responded to the Notice of Violation on May 23, 1980 and to the Order to Show Cause on July 28, 1980.

12/28/79 - Licensee Letter

2/7/80 - Licensee Letter

Subsequent inspections have monitored the licensee's progress in the implementation of the corrective actions related to the May 23 and July 28, 1980 responses. These inspections have revealed adequate corrective actions to date.

2/28/80 - Licensee Lett
4/30/80 - Notice of Violation
4/30/80 - Order to Show

As stated above, Region IV issued IALs on June 22, 1979 and April 17, 1980 to confirm actions planned and specify steps where resumption of work would be subject to NRC approval. Letters of December 12, 1979 for the first IAL and June 10, and July 17, 1980 confirmed actions taken in the cases of the stop-work orders.

3. Licensee Corrective Actions

The licensee provided detailed corrective actions in his responses of May 23, and July 28, 1980. He also provided Region IV on September 18, 1980 with a listing of

5/23/80 - Licensee Lett
7/28/80 - Licensee Lett

the commitments included in his response with a schedule for completion and responsibilities for the commitments by various members of his organization. The licensee designated contacts within the HL&P organization for the various areas to interface with Region IV inspectors.

9/18/80 - Licensee Lett

B. Contention

"Personnel training regarding Quality Assurance was inadequate."

1. Basis

References

A special investigation conducted over the period of November 10, 1979, to February 7, 1980, revealed that a lecture given by the B&R QA Manager on January 4, 1980, to B&R QA/QC personnel and construction personnel repeatedly overemphasized the B&R QA/QC organization's responsibilities to minimize project cost and maintain the construction schedule. The lecture also emphasized that the B&R QC inspector's decisions were subject to question, challenge, and supervisory review and reversal.

IE Report 50-498/499 79-19

2. NRC Actions

The NRC issued an order to show cause on April 30, 1980, which included requirements

4/30/80 - Order to S Cause,

that the licensee destroy or revise a videotape utilized in the January 4, 1980 lecture; republished a QA program brochure which reflects fundamental philosophies of 10 CFR 50, Appendix B; and conduct new training on fundamental philosophies and standards of the QA program.

IE Reports 50-498/499 80-04, 80-18

7/28/80 - Licensee Let

The licensee's July 28, 1980 response to the order to show cause was reviewed and the proposed corrective action was found acceptable.

Subsequent NRC inspections have monitored licensee progress in implementation of corrective actions related to the licensee response to the order to show cause. The licensee's corrective action was acceptable.

3. Licensee Corrective Action

The licensee has rescinded the previous QA program brochure and has removed the video tape from the site. A new QA program brochure has been published and issued to site personnel. Training seminars have been conducted on the objectives and standards of the licensee and B&R QA programs.

7/28/80 - Licensee Let

C. Contention

References

"Construction pressures thwarted Quality Control functions. There were threates, harassment and intimidation of Quality Control Inspectors and the licensee (who was knowledgeable of these problems) failed to take effective corrective action."

4/30/80 - Order to Show Cause

1. Basis

Prior to Investigation 79-19 and the Order to Show Cause, Region IV inspection and investigations documented several instances where QC inspectors had been harassed, verbally and physically abused, and had not been adequately supported by their QA/QC managers. Region IV management met with HL&P Senior Management to express concern that even though many allegations could not be substantiated low morale was evident because of perceived pressures by construction workers and perceived lack of support when subjected to such pressures.

IE Reports 50-498/499, 77-08; 78-09; 78-12 78-13; 79-09, 79-14

The Special Investigation, initiated November 10, 1979, resulted because of multiple allegations given to the Resident Reactor Inspector (RRI) on November 2, 1979. During this lengthy investigation, (November 10, 1979 - February 7, 1980) the investigation team was able to substantiate that undue pressures were placed on QC personnel. The results of interviews indicated that some civil quality control inspectors were: (a) subjected to production pressures, (b) not always supported by the QC management, (c) harassed, (d) intimidated, and (e) threatened.

4/30/80 - Order to Show Cause

IE Reports 50-498/499 79-19

2. NRC Action

On April 30, 1980, the NRC issued IE Report 50-498/499, 79-19; a Notice of Violation, a proposed civil penalty amounting to $100,000, and an Order to Show Cause, requesting the licnesee show why work should not be stopped 90 days from the date of the order.

4/30/80 - Order to Show Cause.

IE Report 498/499, 79-19

Region IV conducted a public meeting on August 19, 1980 to discuss the licensee's response to the Order to Show Cause.

Public Meeting Transcript

On August 20, 1980, a Region IV NRC Task Force started a series of follow-up inspections. Follow-up on pressures, harassment, threats, intimidations and lack of support was documented in IE Report No. 80-25. In addition, the resident inspector has had many informal interviews with HL&P and B&R personnel during the last year and it appears that the perceived or real pressures, threats, harassment and intimidation have almost disappeared.

IE Report 50-498/499, 80-25

3. Licensee Corrective Action

On December 28, 1979, about the midpoint of the special investigation, the team briefed HL&P of preliminary findings. As a result HL&P proposed and implemented corrective action in a nine point plan.

12/28/79 - Licensee Letter

On January 24, 1980, the NRC Special Investigation Team held an exit interview with HL&P and B&R. As a result HL&P proposed and implemented a 13 point Corrective Action Plan. The licensee took corrective action on their own initiative before receiving the investigation report, Order to Show Cause and the proposed civil penalty

2/7/80 - Licensee Letter

On May 23, 1980, the licensee provided a comprehensive response to IE Report 79-19, Appendix A violations. The corrective actions, proposed and subsequently implemented, brought the licensee into compliance.

On July 28, 1980, the licensee paid a $100,000 civil penalty which had been proposed by the the NRC and provided a very detailed and comprehensive response to the Order to Show Cause, Section V A(1)-(10). New seminars were held to describe the QA program philosophies. The response gave clearer direction and authority to stop work. These steps were aimed at taking the pressure off QC inspectors.

7/28/80 - Licensee Letter

On August 19, 1980, the licensee discussed his response in a public meeting in Bay City, Texas. Licensee action is complete on Contentions C.

Transcript of Meeting. 9/28/80 - Licensee Letter

D. Contention

"There were numerous instances of failure to follow procedures in the areas of document control, material storage..."Contentions with respect to instances of failure to follow procedures in areas of "concrete placement" and "welding" are discussed in Contentions H and G, respectively."

1. Basis

References

There were several instances of failure to follow procedures for document control. Examples include failure to maintain currect Pittsburg-Des Moines QA Manuals, failure to destroy or stamp "void" a deleted B&R QA procedure, use of an expired interim change to an NDE procedure and B&R QA manuals did not contain the latest Document Change Notices or interim changes.

IE Reports 50-498/499, 79-13, 79-19

There were several instances of failure to follow proceudres for material storage which were identified as unresolved items. Examples include inaccurate storage and maintenance instructions, inadequate protection of equipment from sandblasting debris, inadequate level B storage facility, disconnection of electrical power to heaters in electrical motors and inadequate tagging and/or segregation of nonconforming materials. Failure to provide protection for a weld preparation was identified as an item of noncompliance in IE Report 50-498/499, 80-07.

IE Reports 50-498/499, 79-13, 79-22, 80-07 80-10, 80-18

2. NRC Actions

Implementation of licensee corrective action relative to document control was monitored during subsequent NRC inspections. Licensee corrective actions were acceptable.	IE Reports 50-498/499, 80-06, 80-24, 80-25, 81-06 11/2/79 - Licensee Letters 2/26/80 - " " 5/23/80 - " "
Implementation of licensee corrective actions relative to material storage was monitored during subsequent NRC inspections. Licensee correctve actions related to maintenance of required environmental conditions in storage areas were found to be inadequate and NRC findings were escalated from classification as unresolved items to a Severity Level V violation in IE Report 50-498/499 81-01. Licensee corrective actions related to the other material storage problems were found to be acceptable during subsequent NRC inspections.	IE Reports 50-498/499, 80-35, 81-01, 81-06 81-20 5/23/80 - Licensee Letters 4/13/81 " " 5/28/81 " "

3. Licensee Corrective Actions

The licensee has taken corrective action relative to document control including revision of procedures, assignment of additional personnel and increased surveillance by QA.	11/2/79 - Licensee Letter 2/26/80 - Licensee Letter IE Reports 50-498/499, 80-06, 80-24, 81-06
The licensee committed to and has taken corrective action relative to protection of weld preparations including changes to procedures, increased surveillance by QA, and repair of the damaged weld preparation. Unresolved items identified were not addressed in formal written responses; however, verbal discussions related to implementation of corrective action were held with members of the Region IV staff during site inspections.	5/23/80 - Licensee Letter IE Reports 50-498/499, 80-35, 81-01, 81-06, 81-20

E. Contention

"Audit and surveillance programs were improperly implemented."

1. Basis

References

The special investigation team reviewed the HL&P and B&R audit/surveillance program to verity (1) that the subject audits reviewed objective evidence, (2) the audits assessed the effectiveness of the QA Program, and (3) program nonconformances were identified and corrected. The team found a weak audit and surveillance program: (1) HL&P and B&R management did not become sufficiently involved when audit deficiencies/ nonconformances were not corrected, (2) neither HL&P nor B&R performed supplemental audits despite the fact that allegations continued from mid-1977 through 1979 regarding civil activities and despite the fact that significant structural deficiencies, large voids in the Unit 1 containment shell, were evident in early 1978. The voiding was still occurring in late 1979, (3) HL&P and B&R audits were mainly a paper review with little or no attempt to relate records to work results, (4) B&R construction was not audited in 1977, 1978, and 1979, and (5) HL&P surveillances were ineffective.

4/30/80 - Order to Show Cause
IE Report 50-498/499 79-19

The NRC Resident Reactor Inspector (RRI) identified continuing audit program problems during the July 1980 inspection period. Senior Management was still not sufficiently involved with the audit process to assure resolution of impasses regarding audit findings and timely corrective action.

IE Report 50-498/49 80-18

2. NRC Action

Following the special investigation findings described in paragraph 1 above, the NRC issued a report which contained violations, a proposed civil penalty. and an Order to Show Cause

IE Report 50-498/4 79-19
4/30/80 - Order to Show Cause and Civil Penalty.

Commitments to improve the audit program were discussed with the licensee and contractor during the public meeting held on August 19, 1980.

Transcript of meeting

All noncompliances, described in Appendix A of Report 79-19 and 80-18 have been corrected. NRC follow-up inspection relative to audit deficiencies began in July 1980. Additional deficiencies found during follow-up inspections have been identified and corrected.

IE Reports 50-498 80-18, 80-25

The NRC followed up and verified that licensee commitments described in the HL&P letter, dated September 18, 1980, were implemented.

3. Licensee Corrective Action

The licensee took corrective action in response to a management meeting in December 28, 1979, described in a Nine Point Plan documented after the meeting. Further corrective action was taken as documented in a Thirteen Point Plan immediately after the NRC exit interview on January 24, 1980.	12/28/79 - Licensee Letter 2/7/80 - Licensee Letter
On May 23, 1980, the licensee officially responded to special Investigation Report 79-19 and described their corrective action taken or to be takne relative to Appendix A, Items 14, 18, and 19.	IE Reports 50-498/499, 80-18, 80-25
On July 28, 1980, the licensee responded to the Order to Show Cause, Section V.A.(9). A public meeting was held to discuss this response on August 19, 1980.	7/28/80 - Licensee Letter Public Meeting Transcript
On October 23, 1980, the licensee responded to an item of noncompliance written because corrective action relative to 79-19 was not adequate.	IE Reports 50-498/499, 80-18, 80-25
On September 18, 1980, the licensee summarized commitments made to the NRC. The RRI inspector has followed up on each commitment to assure proper implementation.	IE Reports 50-498/49 80-27, 81-04, 81-07, 81-12, 81-23

F. Contention

"The licensee had a breakdown in the implementation of the Quality Assurance program and management controls for safety-related...welding." The contention of breakdown in implementation of the QA program and mangement controls for safety related concrete powers is discussed in contention G.

1. Basis.	References
There were several breakdowns in the implementation of the QA program and management controls for safety-related welding activities. Examples include: welding being performed without adequate protection from the atmospheric conditions; improper radiographic techniques; improper interpretation of radiographic and liquid penetrant examination results for weld quality; and design changes to welding requirements without proper review and approval.	IE Report 50-498/499 79-19

2. NRC Actions

A special investigation was conducted between November 10, 1979 and February 7, 1980, regarding alleged intimidation of quality control inspectors and to assess the effectiveness of the QA/QC	IE Report 50-498/499 79-19 4/30/80 - NRC Letter 7/28/80 - Licensee Letter

program for ongoing activities. On April 30, 1980, the licensee was issued a Civil Penalty for the NRC identified items of noncompliance and an Order to Show Cause why safety-related construction activities should not be stopped.

IE Report 50-498/4
80-24, 80-28, 80-3
80-35, 80-36, 80-3
81-03, 81-06, 81-0
81-14, 81-21.

The licensee's July 28, 1980 response to the Order to Show Cause was reviewed and the proposed actions to correct the welding problems have been found acceptable.

Subsequent inspections have monitored licensee progress in implementation of corrective actions related to the Order to Show Cause response.

3. Licensee Corrective Action

In response to the NRC Order to Show Cause, the licensee committed to an extensive re-examination program to establish the adequacy of the existing welds and a gradual re-start of safety-related welding on a controlled basis. The re-examination program and gradual restart was initiated on October 6, 1980 and is ongoing.

10/3/80 - NRC Lett
11/21/80 - NRC Let

G. Contention

"The licensee mangement had a breakdown in the implementation of the quality assurance program and management controls for safety-related concrete pours ....."

1. Basis

References

There were voids discovered behind the liner plate in the Unit 1 Reactor Containment Building wall in concrete lifts no. 8 and 15. On October 20, 1978, the licensee notified Region IV of the existence of voids in the concrete in lift 15 of the Unit 1 RCB. The deficiency was reported to have been caused by the compounded effects of inadequate planning, an unusually long placement time, longer than normal pump discharge lines and concrete pump breakdown. In addition, the procedural provisions for stopping of work due to problems were not exercised by construction or quality control. On June 18, 1979, the licensee reported voids in the concrete lift of the Unit 1 RCB. These voids were discovered during the amplified investigation of the remaining concrete lifts of both units. These voids occurred beneath penetrations and beneath liner plate stiffeners.

IE Reports 50-498
499,
78-16, 79-04, 79-
79-12, 80-06, 80-

2. NRC Actions

Following the October 20, 1978 and June 18, 1979 notifications, discussed in 1 above, the NRC issued an IAL on June 22, 1979 to confirm actions taken or planned to be takne by the licensee. A special inspection was conducted between November 10, 1979 and February 7, 1980 which in part addressed management and procedural controls in the area of concrete placement. As a result of this inspection, an item of violation was identified, "Failure to Correct Inadequate Concrete Practices." On April 30, 1980, the licensee was issued a Civil Penalty and a Show Cause Order requiring a review of safety-related concrete structures to determine whether previous concrete work was properly performed. The licensee's July 28, 1980 response to the Show Cause Order and their May 23, 1980 response to the violations were reviewed and the licensee's actions and proposed actions to correct the problem have been found acceptable.

6/22/79 - NRC Letter
IE Report 50-498/499, 79-19
4/30/80 - NRC Letter

Subsequent inspections have monitored licensee progress in implementation of the corrective actions related to the placement of concrete in safety related structures.

3. Licensee Corrective Actions

The licensee has taken specific corrective actions in response to the identified violation and the Show Cause Order. Construction and inspection procedures and necessary engineering design documents have been revised to reflect the recommendations contained in the report of the deficiencies. The repairs to restore the concrete shell to its originally designed structural integrity have been completed. The repair methods used were thoroughly tested and analyzed prior to their use and after the repairs were complete.

IE Rpts. 50-498/499, 81-16, 81-22

H. Contention

"Extensive NRC investigation of licensee activities resulted in numerous items of noncompliance, escalated enforcement, frequent mangement contacts, and an NRC show cause order to assure compliance with NRC requirements."

(See Contention A, NRC Action)

I. Contention

"Incremental resumption of safety-related concrete placement and welding has been subject to the approval of the NRC."

(See Contention A, NRC Action)

Washington Nuclear Project No. 2 Evaluation Period: (4/1/79-4/1/80)

I. General

On June 17, 1980, NRC issued a 10CFR50.54(f) inquiry on quality assurance, simultaneous with a notice of violation and $61,000 civil penalty, as a result of serious deficiencies in the sacrificial shield wall, pipe whip restraints, and other construction deficiencies. The 10CFR50.54(f) inquiry required the licensee to provide information on the steps to be taken to provide reasonable assurance that the approved quality assurance program has been implemented and the steps to be taken to strengthen management control of the project.

On July 17, 1980, the licensee responded to these enforcement actions by halting work by the prime mechanical contractor. The licensee also stopped work by all site contractors pending an evaluation of their detailed work methods to assure that there would be no quality problems upon their return to work. The following nine months were spent on the planning, mobilization, and operation of three task forces to implement the corrective actions outlined in the response to the 10CFR50.54(f) inquiry and notice of violation.

Task Force I was established to expedite resolution of the outstanding problem backlog at WNP-2. The task force performed an initial review of outstanding problem areas which resulted in recommendations to improve controls over backlogs and short term goals for reduction of backlogs. These recommendations were assembled into an action plan for implementation which is essentially complete.

Task Force II consisted of a restart plan to ensure that contractor quality controls were effective and that any resumption of work would have minimal risk of quality problems and would not preclude reinspection of completed work. These efforts were essentially completed by the end of March, 1981 with most contractors released to start work. Task Force II also consists of a program to reverify the adequacy of completed safety-related work. Detailed plans for accomplishing this activity are being formulated.

Task Force III was established to disseminate the lessons learned at WNP-2 to other licensee projects and to review and evaluate the management systems of site organizations, including site contractors. These efforts are continuing.

Following the appointment of Mr. R. L. Ferguson as Managing Director in June, 1980, substantial Supply System and WNP-2 organizational changes were announced. These changes include the establishment of a site-based Program Director for WNP-2 who is responsible for the construction, startup, and initial power generation of the facility. Other actions included a change in the reporting relationship of the WNP-2 Project Quality Assurance Manager from the Corporate Quality Assurance Director to the WNP-2 Program Director and the establishment of a new Corporate Directorate of Nuclear Safety.

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In March, 1981, it was announced that Bechtel Power Corporation would assume the function of Construction Manager, including Quality Assurance, effective June 1, 1981. Bechtel is also functioning as systems completion contractor and will perform the reverification of completed safety-related work. As systems completion contractor, Bechtel may be assigned responsibility for completion of a contractor's work package. This provides a clear alternative to a contractor whose performance may be unacceptable.

The integrated WPPSS/Burns and Roe, Inc. organization has been abolished with Burns and Roe retaining the function of Architect-Engineer. The licensee is now performing quality assurance overview. The licensee has also withdrawn from direct involvement in engineering activities specific to the project, assigning these functions to the Architect-Engineer. The Architect-Engineer moved more engineering functions and personnel to the site and opened an office in the nearby town of Richland. This supports evaluation and disposition of engineering questions relating to deficiencies found during the reviews of detailed work methods and backlogs of nonconformance documents.

II. Specific

A. Contention

The facility displayed evidence of weakness in the area of "quality assurance (including management and training)."

1. Basis

Thirty-three items of noncompliance were identified during the appraisal period, representing a significant increase from previous years. In terms of inspection manhours per noncompliance, the enforcement history indicated a deterioration in licensee performance. For the first half of 1980, the noncompliance rate was 21 inspection manhours per noncompliance, compared to 51 hours/noncompliance in 1979 and 142 hours/noncompliance in 1978.(1) All of the current items of noncompliance related to work performed by the licensee's contractors. This performance trend developed despite an NRC Enforcement Conference in 1978(2) and subsequent management meetings in 1979 which addressed less than satisfactory performance.(3)

Of the 33 items of noncompliance identified during the current appraisal period, five were repetitious of previous NRC findings, indicating a weakness in the licensee's ability to effect lasting resolutions to quality concerns. Sixteen of the items of noncompliance involved work which was performed during the 1976 to 1978 time frame, raising questions about the effectiveness of the licensee's quality assurance program during that time. While two of the items of noncompliance related specifically to inadequate qualification of personnel, the repetitive nature of some findings, and the more general deficiency of poor procedure implementation indicated a weakness in the licensee's employee training and indoctrination program.

In summary, the significant increase in the number of items of noncompliance, including the repetition of five items of noncompliance, disclosed ineffective quality assurance program implementation with inadequate control of contractor's activities. A below average rating was, therefore, assigned to the area of quality assurance.

2. NRC Actions

NRC actions during the appraisal period included a management meeting in April 1979 reiterating NRC concerns with the lack of effectiveness of the licensee's quality assurance program (concerns which were previously expressed in an Enforcement Conference in May 1978).

Other actions included a major investigation relating to the fabrication and erection of the sacrificial shield wall and pipe whip restraints.(4) Two "Immediate Action Letters" were issued in November 1979, effectively stopping further construction activities in those two areas pending NRC verification that effective control measures were implemented for correction and repairs.

Based upon the results of the above investigation and the routine inspection program, a Civil Penalty (in the amount of $61,000) was levied on the licensee.(5) In addition, a 50.54(f) request was issued to obtain further information regarding the adequacy of previously completed work and whether current and future work is (will be) adequately controlled.(6) The NRC also assigned a resident construction inspector to the WNP-2 site to monitor licensee corrective actions.

3. Licensee Actions

The licensee has undertaken major organizational and personnel changes in addition to the development of a new quality assurance program. The organizational and personnel changes included the assignment of a new Managing Director, and a project completion contractor (Bechtel). The new quality assurance program is currently under NRC review. This program includes additional management actions to assess the acceptability of previously completed work; examination of work procedures; and expanded training requirments.(7)

B. Contention

The facility displayed weakness in the area of "safety-related structures."

1. Basis

During the appraisal period, eight items of noncompliance were issued which relate to safety-related structures (primarily the reactor vessel sacrificial shield wall).(1) The most

significant noncompliance related to the failure to properly weld the sacrificial shield wall together, a condition which (if it had gone undetected) would have left the structure incapable of withstanding the shear forces postulated during accident conditions.(5) Other items included work on structures without qualified procedures, failure to qualify inspection personnel, and failure to maintain adequate records.(4)

2. NRC Actions

NRC actions are summarized under item A.2. above. In addition, the NRC performed a detailed technical review of the licensee's assessment of the structural adequacy of the sacrificial shield wall as well as the licensee's proposed repair program.(8)

3. Licensee Actions

In addition to the programmatic corrective actions discussed in A.3 above, the licensee has performed: a 100% reinspection of all accessible surfaces of the sacrificial shield wall; extensive technical analysis of the defects and wall integrity; and a thorough examination of all records related to the erection and inspection of the structure.

C. Contention

The facility displayed weakness in the area of "piping and pipe supports."

1. Basis

During the appraisal period, fourteen items of noncompliance were issued relating to piping and pipe supports.(1) Major deficiencies were identified in pipe whip restraints used inside the containment to minimize the detrimental effect of a major break in a steam line or other pipe. Analogous to the problems identified with the sacrifical shield wall, the NRC noncompliances pertained to: work on the restraints without qualified procedures; failure to qualify inspection personnel and failure to maintain adequate records.(4) Other noncompliances issued during the appraisal period included: improper control of post weld heat treatment of main steam and feedwater pipe welds;(9) and the failure to properly perform inspections of pipe supports and attachments to pipe.(4) The subject of inadequate control over pipe support erection and inspection activities was the basis for nine previous items of noncompliance.(10)(11)

2. NRC Actions

In reference to the piping post weld heat treatment problems, the NRC retained an independent consultant who performed metallographic tests on pipe welds to determine the acceptability of the hardware. It was concluded that, for those welds examined, the improper heat treat controls did not result in damage to the pipe.(9) The licensee's performance in the area

of piping and pipe supports was addressed in management meetings[1] and the Civil Penalty[5] and 50.54(f)[6] correspondence. Licensee corrective actions are being monitored by the NRC Resident Inspector at the site.

3. Licensee Actions

The licensee has committed to perform further investigations and technical analyses to verify the adequacy of the post weld heat treatment procedure used.

Other reviews and analyses are underway to address the problems related to pipe whip restraints and pipe supports. Deficiencies in pipe whip restraints have been identified by nondestructive testing and the licensee is evaluating the feasibility of onsite repair of these deficiencies. The reverification program will include detailed reinspections of pipe supports and restraints.

D. Contention

Weaknesses were identified in the area of "electrical equipment."

1. Basis

Licensee weaknesses in the area of electrical equipment contributed to three items of noncompliance during the appraisal period; these were: failure to properly install emergency battery racks;[12] improper identification of safety-related circuit breakers,[12] and the installation of non-quality class I instrumentation into the reactor protection system.[13]

2. NRC Action

The NRC has monitored the licensee's actions taken in response to the specific items of noncompliance. These actions are still in progress so that a final assessment in this area has not been reached.

3. Licensee Action

The licensee has initiated actions to properly resolve the items of noncompliance including proper identification of safety-related circuit breakers; procurement of new battery racks; and verification that the requisite quality characteristics have been specified for reactor protective system instrumentation. The Architect-Engineer has increased the size of the onsite electrical engineering organization which is now reviewing and rewriting FSAR Chapters 7 and 8 and evaluating the degree of compliance with regulatory requirements.

E. Contention

Weaknesses were identified in the area of "electrical cabling (trays and wires)."

1. Basis

While only one item of noncompliance relating to electrical cable installation was identified during the appraisal period (cable identification coding), a significant item of concern relating to electrical cable separation has remained unresolved. In 1978 and 1979, the NRC expressed concern to the licensee about the lack of definition in the licensee's requirements for electrical cable separation.[14,15] From the NRC perspective, it was not assured that final cable installations would be in accordance with industry standards (IEEE-384) and the NRC Regulatory Guide (RG-1.75). During the appraisal period, it was determined that installed cabling was not in full accordance with these documents. The technical acceptability of the as installed configurations has not been finally determined.

2. NRC Actions

The NRC verified proper resolution of the incorrect cable identification coding. The Office of Nuclear Reactor Regulation has reviewed the licensee's proposed separation criteria[16] and has taken exception to several of the criteria.[17]

3. Licensee Action

The licensee has properly resolved the item of noncompliance involving cable identification coding. A revised separation criteria has been developed and submitted to the NRC as a part of their FSAR. As indicated above, the NRC Office of Nuclear Reactor Regulation has taken exception to some areas of the revised separation criteria. The licensee is now evaluating these exceptions to determine their degree of compliance to the NRC position.

F. Contention

Weaknesses were identified in the area of "instrumentation."

1. Basis

During the appraisal period, six items of noncompliance relating to instrumentation were identified. Four of these items were repetitive items of noncompliance involving the failure to maintain cleanliness of instrumentation tubing and piping. The remaining items involved welding and inspection of instrumentation piping.

2. NRC Actions

The repetitive nature of the noncompliances was discussed in management meetings,[1] and the Civil Penalty[5] and 50.54(f)[6] correspondence. Correction of the specific items of noncompliance is being monitored by the NRC staff.

3. Licensee Actions

The licensee's response to the items of noncompliance and the 50.54(f) letter included actions to ensure that procedures adequately reflect the requirements of applicable codes and standards and that contractor personnel are adequately trained to these procedures. The restart of work by the instrument contractor has been accompanied by heightened quality assurance surveillance. Protection has been provided for instruments and startup personnel have been instructed in the maintenance of instrument system cleanliness.

G. Contention

"The area of quality assurance was characterized by ineffective program implementation and inadequate control of contractor activities."

(See Contention A)

H. Contention

"There were numerous items of noncompliance involving procedure and drawing adherence, control of special processes (welding and NDE), and maintenance of quality assurance records."

(See Contentions B and C)

I. Contention

"The licensee had extensive difficulties in installation of safety-related pipe whip restraints, and in the erection and welding of the sacrificial shield wall."

(See Contention C regarding pipe whip restraint problems and Contention B regarding erection and welding of the sacrificial shield wall problems)

J. Contention.

"Licensee submittals to NRR displayed technical weaknesses and the licensee was not responsive to NRC technical requests on various occasions."

1. Basis

The staff rejected in June 1977, the FSAR which was tendered in March 1977 partially on the basis that Chapter 7 was unacceptable. Specifically, this section was completely outdated and did not reflect the as-built plant or licensing progress on similar plants (LaSalle, Zimmer). FSAR was retendered (3/78) and docketed in June 1978 with deficiencies still in Chapter 7.

Prior to the NRC action (see below), it appeared that the applicant had given inadequate in-house manpower to the I&C (Chapter 7) material supplied by the NSSS, which was not current.

2. NRC Action

First, NRR requested that the more deficient portions of the FSAR be rewritten to conform to Reg. Guide 1.70 and the SRP. Next, we requested that WPPSS conform its application to the guidance/ examples provided by responses of other applicants to staff questions and positions and to conclusions in our SERs. Finally, we requested that where practicable, resolutions developed by other OL applicants for similar facilities be applied. We transmitted these requests to WPPSS in our letter of March 28, 1979.

3. Licensee Corrective Action

In response to the staff's requests, the applicant submitted or completely revised Chapter 7 in July 1980. Additionally, the applicant hired more technically qualified people and assigned them to the task of implementing both the spirit and the letter of the staff's requests on this matter. This included significant hardware changes in the plant to conform to the appropriate IEEE standards and the staff requirements on similar plants. As a result of the firm action by NRR in the I&C review at the beginning of this evaluation period, the licensee took actions in this period which corrected most of the serious deficiencies slightly after the end of this evaluation period.

References

(1) USNRC RV WNP-2 SALP Rpt No. 50-397/80-11

(2) USNRC RV WPPSS Enforcement Conferences Rpts 50-397/78-04; 78-06

(3) USNRC RV WNP-2 Inspection Rpt 50-397/79-08

(4) USNRC RV WNP-2 Investigation Rpt 50-397/80-04

(5) USNRC (Stello) to WPPSS ltr of 6/17/80 - Civil Penalty

(6) USNRC (Stello) to WPPSS ltr of 6/17/80 - 50.54(f) Request for Info.

(7) WPPSS ltr No. G02-80-153 to NRC (Stello) of 7/17/80 Response to 50.54(f) Request for Info.

(8) USNRC RV to WPPSS ltr of 1/20/81 - Work Release - Sacrificial Shield Wall

(9) USNRC RV WNP-2 Inspection Rpt 50-397/79-10

(10) USNRC RV WNP-2 Inspection Rpt 50-397/77-07

(11) USNRC RV WNP-2 Inspection Rpt 50-397/78-03

(12) USNRC RV WNP-2 Inspection Rpt 50-397/79-04

(13) USNRC RV WNP-2 Inspection Rpt 50-397/79-16

(14) USNRC RV WNP-2 Inspection Rpt 50-397/78-10

(15) USNRC RV WNP-2 Inspection Rpts 50-397/79-04; 79-09; 79-16

(16) OIE:RV to IE:HQ ltr of 4/29/80 - WNP-2 Cable Separation

(17) USNRC: NRR to WPPSS ltr of 5/4/81 - WNP-2 Cable Separation