ARIZONA PUBLIC SERVICE COMPANY
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January 31, 1984
ANPP-28749-EEVB/WEI

Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Response to Enforcement Letter and Notice of Violations, dated December 12, 1983
File: 84-070-026

Dear Sir:

Arizona Public Service Company (APS), Project Manager and Operating Agent for the Palo Verde Nuclear Generating Station (PVNGS) and licensee under CPPR-141 issued in Docket No. 50-528, submits herewith its response to the enforcement letter, dated December 12, 1983, from the Regional Administrator, Region V, and to Sections I.A. and II of the Notice of Violations (Notice), dated December 12, 1983, transmitted with such letter. The allegations made in Sections I.A. and II of the Notice stem from the unannounced inspection of Palo Verde Unit 1 in September, 1983, by the Region V Construction Assessment Team (CAT).

The response consists of five parts set forth in Attachments A through E to this letter:

Attachment A - APS Management Actions Responsive to the Construction Assessment Team (CAT) Inspection and the Notice of Violation

Attachment B - APS Response to Certain Issues Common to Several of the Alleged Violations

Attachment C - APS Response to Section I.A. of the Notice of Violation for Which a Civil Penalty Is Proposed

Attachment D - APS Response to Section II of the Notice of Violation for Which No Civil Penalty Is Proposed

IE: 14

Attachment E - APS Separate Answer, Filed Pursuant to 10 CFR 2.205, Protesting the Assessment of the Civil Penalty Proposed by Section I.A. of the Notice of Violation

Attachment A explains in detail the comprehensive actions which APS management has taken in addressing the general observations made by the Regional Administrator for Region V in the enforcement letter. The first step taken was the initiation of intensive internal and independent audits of the Palo Verde startup program. The audits were comprehensive in scope covering all activities that take place during startup -- tests and inspections, construction, maintenance and quality control. The findings of such audits led to a series of follow-up actions:

-- The suspension of startup work and testing coordinated by the APS Startup organization.

-- The organization of a broadly based task force to evaluate and recommend measures which strengthen and improve management control of activities performed during startup.

-- Establishment of an improved work control program for work performed during startup.

-- Changes in organizational structure to improve controls of interfaces between the organizations involved in startup work.

-- Renewed efforts in the training and indoctrination of all Palo Verde personnel to implement our goals of safety and quality.

-- Institution of a comprehensive reinspection program reaching beyond the limited scope of the CAT Inspection.

Attachments B, C and D address the specific alleged violations in Sections I.A. and II of the Notice. The violation alleged in Section I.A., for which a $40,000 civil penalty is proposed, is denied. The grounds for the denials include:

-- Inaccuracies in the allegations.

-- Lack of safety significance.

-- Improper assignment of severity levels.

Attachment D, which addresses Violations in Section II of the Notice for which no civil penalty is proposed, requests that the severity levels assigned to such violations be reduced.

These attachments also describe the steps taken and to be taken to correct the conditions found during the CAT Inspection and to preclude their recurrence.

Attachment E protests the civil penalty assessed in Section I.A. and requests its complete remission. In the alternative, the attachment requests mitigation of the penalty.

Apart from the alleged violations stemming from the CAT Inspection (i.e., Sections I.A. and II), the Notice also includes in Section I.B. an alleged violation resulting from an NRC investigation of allegations made in the Spring of 1982 by an individual who was then or had previously been employed at the site. The report of such investigation has not been made public nor disclosed to APS. For that reason, APS requested an extension of time to respond to the alleged violation until all of the information on which it is based is made available. This request has been granted, and APS will make a full and complete response to Section I.B. within the extended time.

At this time, however, we are submitting as Attachment F a partial response to Section I.B. of the Notice. Attachment F addresses some of the technical aspects surrounding the alleged violation. It does not address the elements of the alleged violation relating to the persons involved and their respective responsibilities, because (i) information obtained by the NRC on such elements has not been made available to us; (ii) we have restricted our investigation of these elements on advice of counsel that such an investigation by APS could be construed as interfering with an ongoing federal investigation; and (iii) the matter has been referred to and is currently under review by the Department of Justice.

Since the partial, technical response to Section I.B. may have some relevancy to the matter of the intent of the individuals involved, we suggest that consideration be given to providing such response to the Department of Justice. We have no objection if you follow this course.

We previously sent you on January 11, 1984, a copy of our response to the Notice of Deviation which accompanied the Notice of Violation.

If there are any questions concerning these matters, please do not hesitate to contact me.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
Vice President, Nuclear

EEVBJr:ACG:jaw

Attachments

cc: J. Martin, Region V, NRC
L. Vorderbrueggen, NRC
G. Fiorelli, NRC
K. L. Turley
T. G. Woods, Jr.
W. E. Ide

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Edwin E. Van Brunt, Jr., represent that I am Vice President, Nuclear of Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.

Edwin E. Van Brunt, Jr.

Sworn to before me this 31st day of January, 1984.

Notary Public

My Commission Expires:

My Commission Expires March 11, 1986

ATTACHMENT A

APS MANAGEMENT ACTIONS RESPONSIVE TO THE CONSTRUCTION ASSESSMENT TEAM (CAT) INSPECTION AND THE NOTICE OF VIOLATION

APS MANAGEMENT ACTIONS RESPONSIVE TO THE CONSTRUCTION ASSESSMENT TEAM (CAT) INSPECTION AND THE NOTICE OF VIOLATION

From the very inception of the Palo Verde project, the senior management[1] of APS has actively participated in the management of the project, the quality assurance program established for the project, and the interfaces with the two major contractors engaged in the project, i.e., Bechtel and Combustion Engineering. This intimate involvement of senior management is seen as a major contributing factor to the successes and record of achievements which Palo Verde has attained up to date. Senior management is deeply committed to maintain this record of achievement throughout the startup and operation of Palo Verde.

While the CAT Inspection resulted in the finding "that basic construction appeared to be generally satisfactory,"[2] the number of deficiencies which were found (al-

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1/ "Senior management" when used in this document refers to those officers of APS who are members of its Board of Directors, currently the Chairman of the Board of Directors and Chief Executive Officer, President and Chief Operating Officer, Executive Vice President, Arizona Nuclear Power Project, and Executive Vice President, Finance.

"Project management" when used in this document refers to the APS' Vice President, Nuclear Projects and Vice President, Nuclear Operations and, unless the text indicates otherwise, Bechtel's Vice President and Manager of Domestic Operations, Project Manager, Construction Manager and Project Engineering Manager.

2/ CAT Inspection Report, page 2.

though acknowledged by the CAT Inspection team to be for the most part "minor in nature") and, particularly, the general observations reflecting upon the effectiveness of management control of the transition from construction to operation have served to intensify and deepen APS' senior management involvement and participation in the startup of Palo Verde. There can be no question that the CAT Inspection has achieved the purposes of Appendix C to 10 CFR Part 2.

The CAT Inspection finding of an apparent "weakness in quality assurance and/or a lack of management control by the APS Operations and Startup Groups"[3/] was not a total surprise to APS management. Because of concerns respecting this area, APS project management (i.e., the Vice President, Nuclear Operations) had instituted preparation of a series of administrative controls in May, 1983. These new controls and associated procedures were implemented on September 27, 1983. On August 30, 1983, separate reviews of prerequisite data in the electrical area and the mechanical, instrumental and control, and fire protection areas were instituted by the APS Vice President, Nuclear Operations. This action was followed on September 9, 1983, with the designation of a Startup Data Review Task Force which was given the charter to:

(i) Review the acceptance criteria used in the preceding data reviews;

3/ CAT Inspection Report, page 2.

(ii) Review the management systems used in startup;

(iii) Review the adequacy of the Discipline Test Schedule;

(iv) Review the reportability of information obtained under Section 50.55(e); and

(v) Develop appropriate corrective action recommendations.

Consequently, it is evident that, prior to the CAT Inspection, APS project management had detected the existence of problems in the startup work and, prior to the CAT Exit Meeting, had instituted some corrective measures.

As a result of the discussions at the CAT Exit Meeting on September 30, 1983, APS project management, under the intensive direction and guidance of senior management, has undertaken a comprehensive series of additional actions, including

(i) unifying the responsibility and authority for engineering, construction, startup, operation and maintenance of Palo Verde under one vice president;

(ii) restructuring organizational groups to provide improved control of interfaces;

(iii) establishing a defined control program for all work and testing performed subsequent to transfer of systems, subsystems and areas by Bechtel construction;

(iv) retraining of personnel to the new work control program;

(v) reinspecting or reviewing major portions of work and tests previously performed; and

(vi) improving the effectiveness of quality control activities during construction and startup.

Perhaps most importantly, APS management has renewed its efforts to indoctrinate the personnel at Palo Verde with two concepts:

(a) safety and quality continue to be the two primary goals in completing Palo Verde; and

(b) meticulous attention to detail in the performance of work and completing requisite documentation is vital in achieving those primary goals.

The discussion that follows describes in greater depth the nature, scope and timing of the foregoing APS management actions.

The NRC Enforcement Letter dated December 12, 1983, pointed out two overall management control and quality assurance program deficiencies observed during the CAT Inspection. The management deficiencies perceived by the CAT are:

1. Lack of effective management controls and weaknesses in quality assurance programs implemented during startup.[4/]

2. The Construction Quality Control inspection program allowed a number of minor deficiencies to go undetected.

4/ "Startup" means all of the work and testing performed from the time a system is transferred from Bechtel construction to the APS Startup organization to the time that the system is accepted by PVNGS Nuclear Operations. This includes Prerequisite Testing and Phase I Preoperational Testing, as defined in the PVNGS FSAR, Section 14.2.1.

These NRC concerns had also been expressed at the Exit Meeting held by the NRC with APS senior management[5/] after the completion of the CAT Inspection on September 30, 1983, and the Enforcement Conference held on November 23, 1983.

After the CAT Inspection began on September 6, 1983, APS project management initiated a number of positive actions, some of which were implemented before the Exit Meeting on September 30, 1983. The actions taken encompassed a detailed investigation of the concerns expressed by the NRC. The results of the investigation were reported to, and analyzed by, APS and Bechtel senior management. Where problems were noted, management initiated action to evaluate possible solutions not only for the specific problem identified, but also to determine and correct the root cause. The proposed solutions were presented to management and action was taken to assure that overall management controls would ensure activities affecting quality were properly planned, controlled, carried out and documented. The specific actions taken are noted below for each of the NRC concerns.

5/ Project management, other project personnel at the managerial level, and officers of each of the other utilities participating in Palo Verde also attended the Exit Meeting.

I. Management Control and Quality Assurance During Startup

Even before the end of the CAT Inpsection, it was clear that the NRC perceived a weakness in the management controls and quality assurance program as implemented during the Prerequisite and Preoperational Testing phase of the plant. This subject was discussed briefly at the meeting between the CAT and members of project management on September 16, 1983, that was held to provide a status report on the CAT Inspection.

As previously noted, project management was already aware of some documentation, interface and control problems during this phase of the project. The problems were thought to be partially a result of the several reorganizations and changes in the administrative program implemented during startup. Also, as previously noted, a task force had been designated on September 9, 1983, to consider these matters and a new series of administrative controls and associated procedures, which had been in preparation during the preceding months, were implemented on September 27, 1983.

Nonetheless, having heard the concerns expressed at the Exit Meeting by the CAT inspectors and members of NRC Region V management, the Vice President, Nuclear Operations requested immediately thereafter that APS Corporate Quality Assurance conduct a detailed audit of safety-related systems and all activities which occurred from the time of transfer

of a system from construction to startup until the acceptance of the system by PVNGS Nuclear Operations, including activities performed by Bechtel construction and APS Maintenance. This internal audit was conducted to give APS senior and project management an overall evaluation of the effectiveness of the programs and controls in use during the startup phase of the project. The internal audit was conducted in two parts by separate groups. The first was an audit of the activities performed by the APS Startup organization and Bechtel. This audit was conducted using fifteen auditors under the direction of the Startup QA/QC Manager from October 17 through November 6, 1983. The second part of the audit, which ran concurrently, audited the activities of APS Maintenance. The results of these audits indicated several weaknesses in program control, particularly at interfaces between organizations and in some cases the lack of proper implementation of the prescribed controls.

Additionally, APS senior management, shortly after the CAT Exit Meeting on September 30, 1983, commissioned an independent assessment to evaluate the construction, startup and operations programs with respect to regulatory compliance and readiness to receive an operating license. The assessment was conducted by a team which was led by an experienced person from another utility. Members of the assessment team included other personnel from the other utility, from Bechtel (but not associated with the project)

and from the Palo Verde project. This independent assessment, with recommendations for improvements, was presented to APS senior management in late December, 1983.

In response to the deficiencies identified by the internal audit, the APS Vice President, Nuclear Operations formed the Project Management Interface Task Force on November 22, 1983, to provide recommendations for project-integrated corrective action to resolve the program and control problems identified by the audits and CAT Inspection. Additionally, recognizing that the deficiencies identified by the audits could have an overall effect on the validity of testing and the acceptability of work performed, he ordered on November 23, 1983, all safety-related work and testing coordinated by the APS Startup organization be suspended until a unified project review and evaluation was conducted. This suspension of work did not include repair work being performed by Combustion Engineering on nuclear steam supply system components because of the adequacy of the independent controls on this work provided by Combustion Engineering, Bechtel and APS.

The Project Management Interface Task Force was composed of senior project personnel from the major organizations of APS and Bechtel involved in the project who were temporarily relieved of all other responsibilities. The Task Force was chartered to develop and recommend a consistent, integrated program to respond to the problems per-

ceived, including consideration of various Corrective Action Requests then pending. The Task Force was also directed to develop a recommended program which would be suitable to provide necessary and consistent management controls and to regain, through review, inspection or retest, any loss of control that may have been present. This action was designated to assure that, in the final analysis, it could be demonstrated that startup had been performed in a controlled manner and was supported by documented evidence. The Task Force recommendations, developed after discussions with all levels of APS and Bechtel, were completed and presented to APS senior management on January 17, 1984.

To resolve the deficiencies discovered during the various evaluations and audits and to implement many of the management actions and controls recommended by the Task Force and the Assessment Team, APS management has taken, or has in process, a number of management actions including:

1. Organization restructuring.

2. Development and implementation of a program for resumption of work and testing under controlled conditions.

3. Development and implementation of a program to assure that requirements for an operating license have been or will be satisfied.

These actions described more fully below, which have been, are being or will be implemented, will be incorporated in project programs and procedures and will be

revised as appropriate in accordance with established procedural controls.

1. Organization Restructuring.

On January 5, 1984, the management organization for Palo Verde was significantly changed as shown on Figure 1. The key element of this restructuring is that the APS managers of all project activities, i.e., engineering, construction, startup, operation and maintenance, will now report and be responsibile to a single point of control, i.e., the APS Vice President Nuclear.

Following this change, the Vice President, Nuclear instituted the position of Transition Manager, Figure 2. This position provides a single manager with the authority and responsibility for all activities necessary to accomplish and control the transition from the construction phase to full power operation. Figure 3 shows the Transition Manager's organization which provides the resources to accomplish all necessary tasks. The key element of this step is that the Transition Manager provides a means for centralized management and coordination of the interfaces among the several organizations of APS, Bechtel and Combustion Engineering.

2. Recommencement of Startup Work.

A program and schedule is being developed to allow testing and work to resume in a planned, controlled

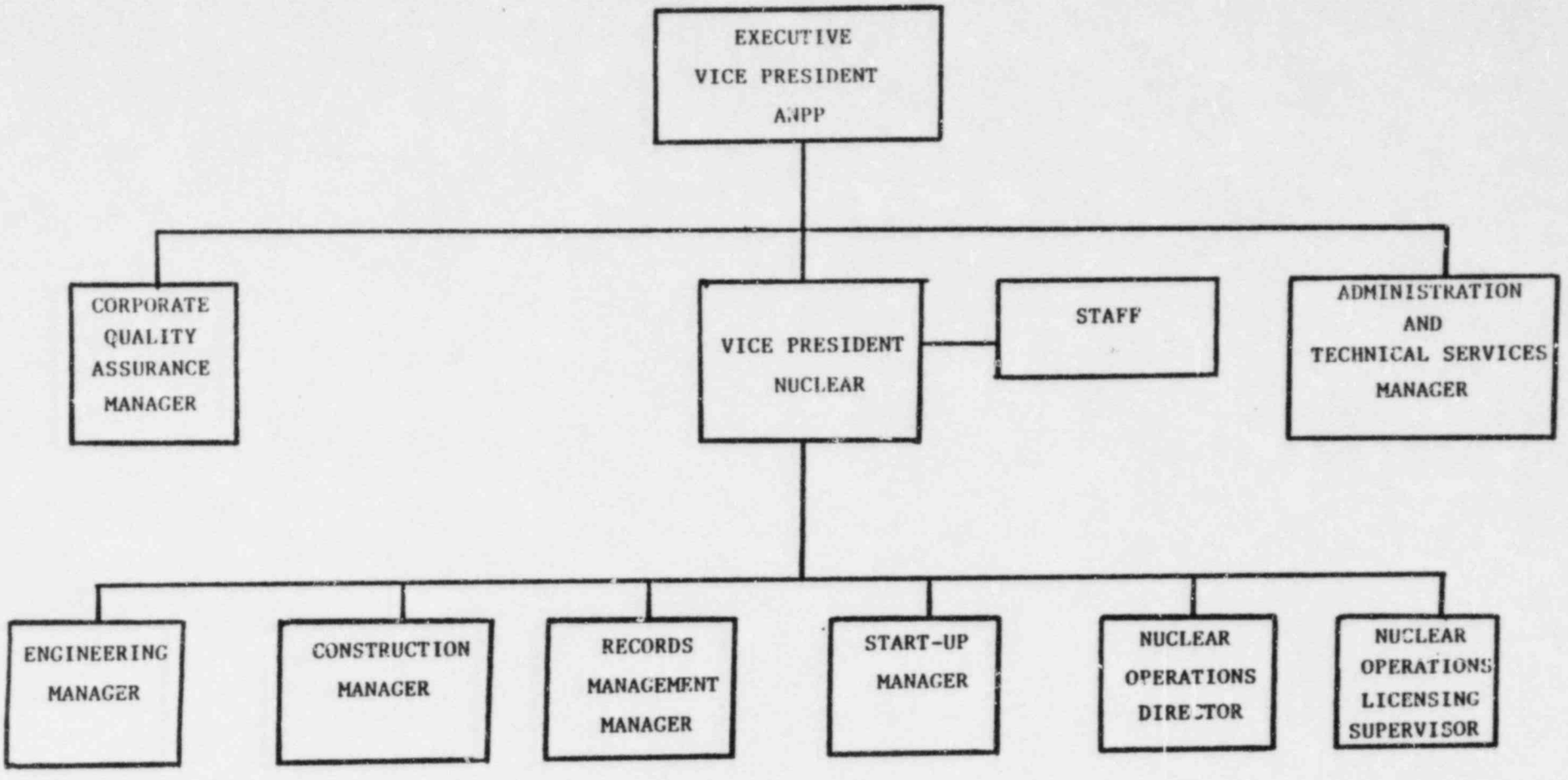

FIGURE 1

ATTACHMENT A

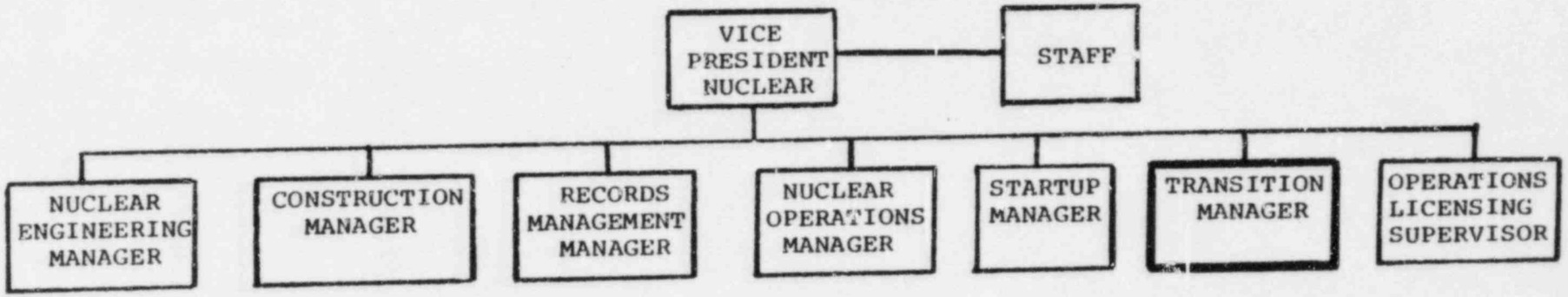

FIGURE 2

ATTACHMENT A

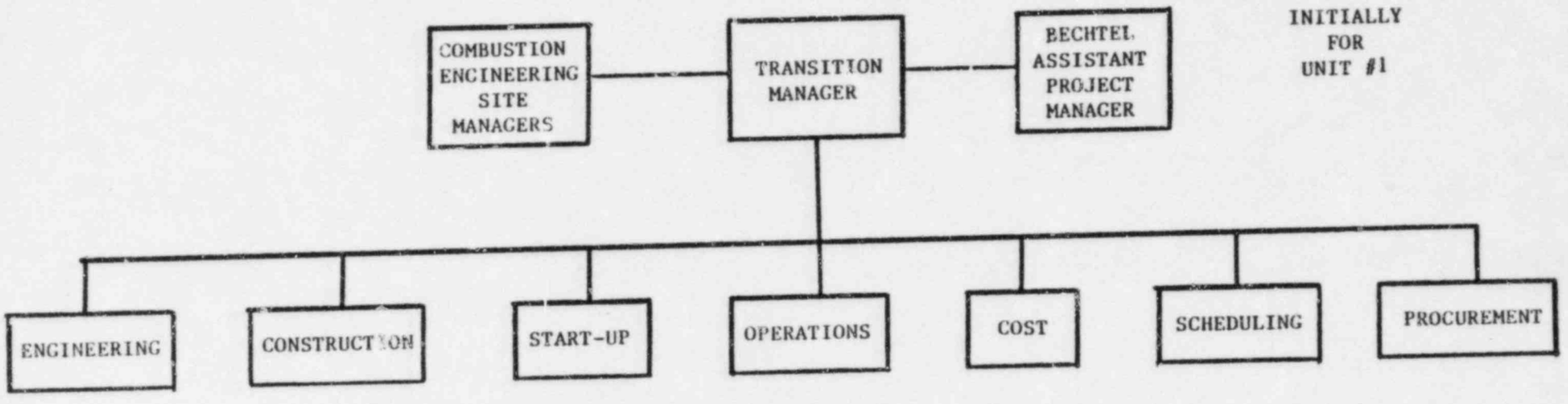

FIGURE 3

ATTACHMENT A

manner. The plan consists of four basic actions defined below.

a. Determine the priority of work and testing required.

This step is taken so that work and testing can be resumed in a planned fashion, starting with the most critical activities. It also allows resumption of work and testing sequentially in a controlled manner so that the effectiveness of the program can be evaluated, and any additional required corrective action can be taken in a timely fashion.

b. Ensure that subsystem configurations are known.

A series of walkdowns to specified criteria have been and are being conducted to assure that the configuration of each subsystem is known prior to the resumption of testing. Since it is possible that some undocumented changes were made in the configuration of systems, management has determined that prior to resumption of any preoperational testing, the actual configuration of the component or system must be verified against design drawings. Deviations are documented and evaluated by engineering and the deisgn is updated or configuration changed to conform with the design. In this manner, when tests are performed

in the future, management will be assured of their validity because the system will have been in the proper design configuration. Additionally, the information as to present configuration will allow the project to evaluate any effects this may have had on the validty of previous Preoperational Testing.

c. Revision of Procedures.

The procedures necessary to perform a test or work activity on a component or system will be evaluated and revised as required prior to the resumption of testing to assure that activities will be performed in a controlled, documented manner. This activity will assure that no work on that component or system will be performed unless authorized and documented so that the configuration and status of a system is known. Additionally, it will assure that testing is performed in accordance with, and controlled by, procedure, and results are properly documented.

d. Training.

Prior to resuming testing, personnel involved will receive training into the need for meticulous attention to detail in their work activity and documentation and the need for complete accuracy. Training will also be provided, as appropriate, in

the procedures to control testing and work activities, the equipment problem tagging system, and the procedure for monitoring proper housekeeping and protection of equipment.

Having planned what work and testing will be performed, knowing the configuration of the subsystem, having assured that the proper procedural controls are in place, and having trained personnel in the procedures and programs, work and testing will be resumed gradually on a system or subsystem basis to assure proper control and to provide for the evaluation of these controls.

3. Program to Assure all Requirements Have Been Satisfied.

In addition to the action taken to resume testing, APS management recognizes the need to assure that, when a system is accepted by PVNGS Nuclear Operations, installation, maintenance, and testing and retesting activites required by design and licensing commitments have been performed and documented. Any deficiencies in these areas must be identified and evaluated. In order to gain this assurance, several actions and reviews have been initiated. Some of the major activities initiated are listed below.

a. Review of Work Authorization Documentation.

A review is being conducted of work authorization documents from the commencement of preoperational testing on a system to the present. This will provide a basis for determining system status and the need for any system retesting.

b. Review of Discipline Test Schedule.

The Discipline Test Schedule is being reviewed to ensure that each safety-related component requiring testing was evaluated to ensure required testing is listed.

c. Review of Preoperational Test Data.

The safety-related Preoperational test data is being reviewed to ensure that the test was completed and correctly documented or the test will be repeated to provide the necessary documentation.

Prior to a system being accepted by PVNGS Nuclear Operations, it will be verified that Preoperational Testing has been approved and satisfies design and licensing requirements. Deviations from the above criteria will be noted and evaluated prior to system acceptance. With this action, management will have assurance that all systems accepted by PVNGS Nuclear Operations have been properly tested.

In addition to these measures, APS project management has taken or is considering additional steps in response to recommendations of the Project Management Interface Task Force to simplify and coordinate areas where interface problems have existed in the past. Actions initiated in this area include:

1. Increasing the Unit Shift Supervisor's level of involvement in activities by requiring his concurrence prior to the start, and his notification of completion of all testing and work activities.

2. Responsibility for control of cleanliness and housekeeping has been promulgated and project personnel have been trained accordingly.

3. The control of material and components in the plant, especially when the components are disassembled, is being strengthened.

4. The responsibility for configuration control within APS, and establishing the interfaces for configuration control transfer from Bechtel to APS, has been assigned to one department, Nuclear Engineering. A Configuration Control section within Nuclear Engineering, headed by a dedicated supervisor, has been established.

5. A more detailed integrated project schedule for activities within the transition period is being developed to provide the ability to better plan and control activities.

6. The nonconformance process to be used during the the transition period has been more clearly defined.

7. Procedures utilized by one organization that may affect the activities of another organization are being evaluated to assure that they properly interface.

8. The responsibility transfer, at time of system transfer and acceptance, is being more clearly defined to ensure that the responsibility for performance of such things as maintenance and housekeeping are understood.

9. The flow path for quality-related records is being more clearly defined to ensure the location and responsibility for control of these records is clearly defined.

10. The work control program utilized during the transition period is being revised to more clearly define and clarify who can perform work and the procedure utilized to perform the work and associated inspection.

In summation, APS management actions have resulted in in-depth examinations and evaluations of the management controls and the implementation of the quality assurance program during startup. On the basis of such examinations and evaluations, action has been or is planned to be taken to strengthen such controls and improve such implementation. In the view of APS management, such actions provide increased assurance that Palo Verde will be completed in a fashion that will meet all Regulatory Requirements. To the extent experience indicates further improvements should be made, APS management commits to do so.

II. Weakness in the Quality Assurance Program During Construction Which Allowed Deficiencies to Go Undetected.

A. Correction of Deficiencies.

During and subsequent to the CAT Inspection deficiencies in the Project Quality Assurance/ Quality Control Program identified by the NRC and the Project were documented, evaluated, and corrective action was taken immediately where appro-

priate. Shortly after the Exit Meeting on September 30, 1983, a broad-based reinspection program was initiated in areas where the CAT Inspection had indicated an inspection problem. These reinspections were conducted to more clearly identify the extent of the problem and to assist in determining the cause and extent of corrective action necessary.

Where appropriate, as indicated in Attachment D, 100% reinspection is being conducted. Additionally, in other areas, such as raceway identification, a new inspection is being added later in the construction process to identify and correct deficiencies.

Where the reinspection effort revealed a number of deficiencies which, when evaluated, had no effect on the ability of the plant to operate, or the safety of the plant, an engineering analysis was conducted to determine the "acceptance criteria" (as distinguished from "inspection criteria") necessary to assure the component or structure would meet its design function. Where such acceptance criteria were determined to be significantly less stringent than the "inspection criteria" which had been utilized during inspection and the reinspection results indicated that

the deficiencies noted during reinspection did not violate the acceptance criteria, additional reinspection was and will be deemed inappropriate. In these cases, any deficiency found previously or in the future would have been or will be identified but dispositioned "accept-as-is."

With this approach, the conservatism in the inspection criteria in relation to the acceptance criteria provides assurance that, even with errors in inspection, adequate design margins are preserved. In each case where this approach was adopted, as indicated in Appendix D, the inspection criteria was not changed. Where this approach is used in the future, the acceptance criteria used to evaluate any deficiencies found during inspection will be established by engineering analysis or will the criteria established in Attachment D.

It should be noted that Palo Verde is licensed to a seismic design loading of 0.2g, but has been designed to 0.25g, a fact which adds considerable margin in the design. In performing the above-stated engineering analyses, no credit has been taken for added conservatism in the seismic design loading; all analyses have been performed at 0.25g.

The details of corrective action taken can be found in the responses to the Notice of Violation in Attachments C and D.

B. Management Meeting.

At the Enforcement Conference on November 23, 1983, the NRC Regional Administrator stressed the need for meticulous attention to detail and accuracy in completing documentation. On the first work day following the Enforcement Meeting, a meeting was held by the then Vice President, Nuclear Projects, and the APS QA/QC Construction Manager with Bechtel Site and APS Site Construction Management to review the discussions at the Enforcement Conference. In this management meeting, the need for meticulous attention to detail and accuracy was stressed. Following these meetings, the APS Construction QA/QC Manager met with Bechtel QC personnel to assure they understood the requirement for meticulous attention to detail and accuracy during inspection.

On November 30, 1983, at the request of the APS Chairman of the Board and Chief Executive Officer, a meeting of APS and Bechtel senior management and other key project personnel was held to discuss the results of the CAT Inspection and the Enforcement Conference. During the meeting

it was concluded that a number of management steps were necessary to investigate the cause for the deficiencies noted and to determine appropriate corrective actions. The steps agreed upon included: (i) an investigation by Bechtel engineering management to determine if tolerances used at PVNGS were appropriate; (ii) a study by the Bechtel Manager of Quality Assurance of the Project Construction QA/QC Program and activities to determine what improvements could be made; and (iii) retraining of project personnel using a video tape made by the APS Chief Executive Officer. This retraining would stress that each individual was to perform his job with meticulous attention to detail and with complete accuracy in completing documentation. These activities are discussed further below.

C. Tolerances.

An independent review was concluded of the erection tolerances for pipe supports to identify if the lack of clearly stated and adequate but flexible tolerances was the cause of some of the lack of conformance of pipe supports with applicable drawings. The review, conducted by the Bechtel Manager of Engineering, Los Angeles Power Division, indicated that the tolerances had been a

problem earlier in the project, but that current project procedures are realistic. No further change in tolerances appears warranted or desirable at this time.

D. Bechtel Management Study of Construction Quality Program.

The Bechtel Manager of Quality Assurance conducted a quality program improvement study of construction activities and the control under the quality program and procedures. The study was conducted in order to evaluate what improvements could be made to increase the effectiveness of the controls implemented during construction. Specifically, the review was to ensure that deficiencies in construction would be properly identified, documented and evaluated. The study results made several recommendations which are being reviewed and evaluated by project management. In areas where the recommendations could have a significant impact on the overall effectiveness of the quality program, action will be initiated.

Specifically, one of the findings noted that in the past there was an attitude in QC which allowed engineering evaluation and disposition of

a deficiency to become the standard by which inspections were conducted. For an example, if minor deviations in weld size were identified by QC inspectors and these deviations were consistently accepted by engineering without rework, the QC inspectors concluded that these conditions were acceptable, that they would be dispositioned in the same manner if documented, and therefore there was not point in documenting the deviation. In this respect, the QC inspector, in essence, was performing an engineering function rather than a strict inspection function.

In the meeting between the APS Construction QA/QC Manager and Bechtel quality control personnel, one of the items discussed was the function of QC to identify deviations and the function of engineering to evaluate the deviations. It was stressed particularly that meticulous attention to detail means all deviations to drawing and specification requirements should be identified and documented.

Also, the Bechtel Project Quality Control Engineer has held training sessions with the Quality Control leads and inspectors to emphasize the requirement to perform inspections to the drawing or specification requirements and to

emphasize that "judgment calls" by QC inspectors are not permitted.

Another finding of the study was that statistical analysis should be employed to aid in the understanding and evaluation of inspection results and in the planning for inspection verification. The use of statistical methods and analysis is currently under review and evaluation for use in the planning and evaluation of Quality Assurance overview of the adequacy of QC inspection as explained below.

E. Indoctrination and Training.

To assure that project personnel, at PVNGS, in Phoenix and in California, understand that management expects and, in fact, demands, meticulous attention to detail and complete accuracy in their work and associated documentation, a video tape was prepared by the APS Chief Executive Officer explaining these issues. This tape is being presented, along with an explanation and training program, to project personnel. Additionally, this tape is being incorporated into the indoctrination program for future Palo Verde personnel, both on-site and offsite.

F. Evaluation of Effectiveness of QC Inspection.

Two programs have been initiated to evaluate the effectiveness of QC inspection at Palo Verde.

The Project Quality Control Engineer had initiated a program to evaluate the effectiveness of inspections by each QC supervisor. This program consists of the QC supervisor performing a reinspection of an installation inspection made by one of his inspectors on a weekly or monthly basis. Discrepancies noted will be identified and evaluated as nonconformances. The QC supervisor will also present periodic training sessions on the errors noted, to all of his inspectors. Additional corrective action will be taken if warranted. This program is designed to increase the effectiveness of QC by providing training in areas where errors are made.

In addition, Bechtel Quality Assurance will perform sample reinspection of QC inspections in areas where problems have been noted. Some of these areas, such as pipe defects, are highlighted in Attachment D. A corrective action reverification plan has also been initiated by Bechtel QA to assure that significant corrective action taken by the Project in response to Deficiency Evaluation Reports and Corrective Action Reports have actually been successful in preventing recurrence. Corrective action for deficiencies noted will be taken, as appropriate.

The actions described above address the generic problems that may have led to the deficiencies in construction quality control. Corrective action is being taken to resolve these problems, and a system to monitor the effectiveness of these controls and to identify other problems has been established.

ATTACHMENT B

APS RESPONSE TO CERTAIN ISSUES COMMON TO SEVERAL OF THE ALLEGED VIOLATIONS

APS RESPONSE TO CERTAIN ISSUES COMMON TO SEVERAL OF THE ALLEGED VIOLATIONS

1. Definition of Construction-Startup Responsibilities

1.1 The CAT Inspection Report, the Enforcement Letter and Section I.A. of the Notice of Violation are premised on a misinterpretation that construction is verified to be complete when systems, subsystems and components are transferred by Bechtel construction to the APS Startup organization.[1/] This misconception was also apparent in the discussions during the exit interview and the Enforcement Conference when members of the inspec-

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1/ See: (1) CAT Inspection Report

(a) ". . . a number of problems identified indicated that some of the deficiencies may have resulted from activities performed after the system or component had been turned over to operations and startup." (page 2)

(b) "The inspections in this area [electrical and instrumentation] revealed deficiencies in the thoroughness of the final inspections and/or in control of maintenance following testing." (page 2)

(c) "Again the inspections in this area [mechanical] revealed deficiences in the thoroughness of the final inspections and/or in maintenance following testing." (page 2)

(d) "Most deficiencies appear to result from inadequate inspections prior to or inadequate control of systems after turnover to operations and startup." (page 3)

(footnote continued on following page)

tion team stressed deficiencies in the "turnover" process and in the walkdown of systems at the time of turnover. Most significantly, during the Enforcement Conference, it became apparent that at least some CAT inspectors were unaware that at Palo Verde Prerequisite Testing is conducted by and is the responsibility of APS Startup after transfer by Bechtel.

1.2 It must be recognized that the Startup Program put in place by APS for Palo Verde is unique. Prerequisite Testing, which is normally associated with completion of construction, has been the responsi-

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1/ (footnote continued from previous page)

(2) Enforcement Letter

(a) ". . . a number of problems identified indicate that deficiencies may have resulted from activities performed after the systems or components had been turned over to Operations and Startup." (page 1)

(b) ". . . the number of such items reflects adversely on the quality of the final quality control inspection effort of your quality assurance program at the time of system turnover to operations. (page 2)

(3) Section I.A. of the Notice of Violation

(a) "The items in Section II [sic] below, although mostly minor in nature, reflect inadequate quality control inspection of a large number of deficiencies which should have been identified during final quality control inspections." (page 1)

(b) "Construction of the containment and pressure sensing systems had been completed, turned over from the constructor to the licensee, and tested." (page 2)

bility of the Vice President, Nuclear Operations, and not the construction organization.

1.3 Procedures in place recognize that the walkdown performed at transfer by construction are designed to determine the status of completion of construction. A method has been developed to track construction items not complete at time of transfer.

1.4 The unique Palo Verde Startup Test Program is explained in the PVNGS FSAR, Section 14.2.1 - Summary of Test Program and Objectives. It is there explicitly stated --

". . . The Startup Test Program consists of Prerequisite Testing plus the following four phases:

-- Phase I Preoperational Testing
-- Phase II Fuel Loading and Post Core Hot Functional Testing
-- Phase III Initial Criticality and Low Power Physics Testing
-- Phase IV Power Ascension Testing."

The FSAR goes on to define "Prerequisite Testing" as follows:

"Prerequisite Testing consists of tests and inspections required to assure construction is complete and that systems are ready for Preoperational Testing. The completion of Prerequisite tests on each system results in system release to operations for the commencement of Preoperational (Phase I) Testing. . . .

Prerequisite testing will verify that construction activities associated with the respective structures, components, and systems have been satisfactorily completed. Prerequisite testing will consist of construction, and preliminary

tests and inspections which typically include, but are not limited to, initial instrument calibration flushing, cleaning, circuit integrity and separation checks, hydrostatic pressure tests and functional tests of components." [Underscoring supplied for emphasis.]

1.5 Thus, under the Palo Verde scheme of things, it is clear that:

a. Transfer of systems or subsystems by Bechtel to APS Startup is not intended to and does not signify completion of construction.

b. Such transfer is made prior to Prerequisite Testing of components.

c. Prerequisite Testing is the responsibility of the APS Startup organization.

d. The walkdown of systems at the time of transfer of systems by Bechtel to APS Startup is not and was never intended to be a "final inspection" or a "final quality control inspection effort."

e. The completion of construction is signified by the acceptance of a system, subsystem or area by PVNGS Nuclear Operations, not the APS Startup organization. Final inspection is completed at this time and is signified by such acceptance. (See PVNGS Station Manual).

f. System configuration is verified by PVNGS Nuclear Operations at the time of acceptance. (See PVNGS Station Manual).

1.6 In light of the foregoing, it was and is incorrect to assume that the "turnover" of systems and components to the APS Startup organization marked the completion of construction or that final quality control inspections took place or were intended to take place on transfer from Bechtel to APS. The

FSAR makes it clear that construction activities by Bechtel continue after transfer and the Prerequisite Testing Program itself, conducted by the APS Startup organization, is an integral part of the completion of construction.

1.7 It is also inaccurate to infer or characterize the transfer of systems and components "from the constructor to the licensee" as a "turnover to operations". It is clear from the FSAR that transfer to the PVNGS Startup organization does not constitute a acceptance to PVNGS Nuclear Operations.

1.8. Prior to a system being accepted by PNVGS Nuclear Operations, the configuration of the system will be verified for conformance to design drawings. It will also be verified that all required testing has been performed and the results are acceptable. This process provides an acceptable means, after subsequent transfer to the APS Startup organization, of detection and resolution of a large number of the deficiencies noted during the CAT Inspection.

1.9 None of the safety-related systems or components inspected by the CAT inspector had been accepted by PVNGS Nuclear Operations.

2. Evaluation of Assignment of Severity Level IV Violation

2.1 APS disagrees with the assignment of Severity Level III to the violation alleged in Section I.A. of the Notice and with the assignment of Severity Level IV to the violations alleged in the following subsections of Section II of the Notice:

II.A.1. Cable Overfill;
II.A.2. Separation;
II.A.3. Raceway Identification;
II.A.4. Raceway Identification;
II.B.1. Structural Steel Bolting;
II.B.2. Concrete Anchor Bolt Installation;
II.B.4. Pipe Support Welding;
II.B.5. Pipe Support Drawings;
II.B.6. Pipe Pit;
II.C. Structural Steel Welding;
II.D. Valve Bolts;
II.E. Seal Material on Pipe Support.

2.2 In each case, as described in Attachments C and D, an evaluation has been conducted to determine whether the condition which had been found could have had a significant safety impact. In each case, except II.B.3, it was concluded that the noted conditions were not safety significant. These violations do not meet the requirements found in Appendix C to 10 CFR to have "more than minor safety or environmental significance" to be classified as Severity Level III or IV violations. Steps were taken immediately (i) to correct the deficient condition that had been found, (ii) to investigate and evaluate the generic aspects of

each deficiency, and (iii) to develop and implement appropriate corrective action, where necessary. In total, the response of APS has been prompt, comprehensive and meaningful. (See Appendix A).

In light of the apparent discrepancy between the safety significance of the alleged violations and the definition of Severity Level III and IV violations and the immediate corrective action taken, it is requested that, with the exception of II.B.3, they be reclassified as Severity Level V.

ATTACHMENT C

APS RESPONSE TO SECTION I.A. OF

THE NOTICE OF VIOLATION FOR

WHICH A CIVIL PENALTY IS PROPOSED

APS RESPONSE TO SECTION I.A.
OF THE NOTICE OF VIOLATION
FOR WHICH A CIVIL PENALTY IS PROPOSED

PART I

RESTATEMENT OF ALLEGED VIOLATION I.A.1

"I. VIOLATIONS ASSESSED CIVIL PENALTIES

"A. 10 CFR 50, Appendix B, Criterion II, as implemented by Chapter 17 of the licensee's PSAR and FSAR, requires, in part, that: 'The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.'

"Contrary to the above requirements, the licensee's quality assurance program did not maintain adequate control over activities affecting quality, as evidenced by the following examples:

"1. On September 10, 1983, it was determined that the containment pressure instrumentation was incapable of performing its intended safety function in that caps had been installed on the sensing lines. Construction of the con-

tainment and pressure sensing systems had been completed, turned over from the constructor to the licensee, and tested. Subsequently, the quality assurance organization directed that the caps be installed without following established QA procedures for correcting potential deficiencies. No administrative requirement existed to assure that the caps would have been discovered until the next scheduled containment leak rate test, pursuant to the operating license requirements. This containment pressure instrumentation is required to automatically initiate the HPSI and other safety systems on high containment pressure.

. . .

"This is a Severity Level III Violation, (Supplement II). (Civil Penalty-$40,000)"

APS RESPONSE TO ALLEGED VIOLATION I.A.1

1. Admission or Denial of Violation

1.1 APS admits the following conditions and facts cited in paragraph I.A.1:

1.1.1 Such systems had been transferred by Bechtel construction to the APS Startup organization.

1.1.2 Certain Preoperational Tests of such systems had been completed.

1.1.3 The APS quality assurance organization directed that caps be installed on the sensing lines.

1.1.4 Caps were installed on such lines pursuant to the direction of the APS quality assurance organization.

1.1.5 The installation of the caps on the sensing lines was not documented.

1.1.6 Containment pressure instrumentation is designed to automatically initiate the HPSI and other safety systems on high containment pressure.

1.2 APS denies the following facts alleged, explicitly or implicitly, in paragraph I.A.1:

1.2.1 Denies that the containment pressure sensing systems had been "turned over" to or accepted by PVNGS Nuclear Operations.

1.2.2 Denies that the walkdown to assure system configuration which is associated with the acceptance by PVNGS Nuclear Operations had been conducted.

1.2.3 Denies that no administrative requirement existed to assure that the caps would have been discovered until the next scheduled containment leak rate test.

1.3 In light of the foregoing admissions and denials and for the reasons hereinafter set forth, APS denies that the undocumented capping of the containment pressure sensing lines prior to acceptance by PVNGS Nuclear Operations, constitutes a violation of Regulatory Requirements.[1/]

1/ The term "Regulatory Requirements" as used in this document has the same meaning given to such term in Footnote 2 to Appendix C of 10 CFR Part 2.

2. Reasons Why No Violation Occurred

2.1 The capping of open lines to prevent the entry of dirt or materials into such lines prior to operation is a proper and prudent action. It is consistent with the requirements of ANSI N45.2.3 for housekeeping during construction and the practices and procedures enforced at PVNGS from the commencement of construction.

2.2 At the time of the CAT Inspection in September, 1983, there was no Regulatory Requirement that caps installed on open lines during construction or testing and prior to acceptance by PVNGS Nuclear Operations be documented.

2.3 The caps installed on the containment pressure sensing lines are testing caps provided per drawing 13-M-HCS-001 and are required for initial and subsequent testing. The removal of the caps during operation is properly a matter to be governed by operating procedures and not construction or startup procedures.

2.4 There was no Regulatory Requirement in existence at the time of the CAT Inspection in September, 1983, that an operating procedure be in place to inspect for the presence of and removal of the caps on the containment pressure sensing lines.

2.5 There was, in fact, an administrative requirement in existence at the time of the CAT Inspection which would have assured detection and removal of the test caps on the sensing line. The closeout of I&E Information Notice 83-23, action on which had been initiated by APS prior to the CAT Inspection, required action and verification of such action to assure the removal of testing caps on the containment pressure sensing lines prior to and during operation.

2.6 Under such circumstances, it is unreasonable and improper to assert that a violation of Regulatory Requirements had occurred in September, 1983, solely on an assumption that the presence of caps would remain undetected because of a future violation of a future Regulatory Requirement.

2.7 Acknowledging that it would have been prudent and good practice to have documented the placement of the caps on the sensing lines (as well as any other changes in the configuration of systems during startup), the lack of such documentation does not by itself demonstrate by example the lack of control of activities affecting quality where it cannot be demonstrated that other administrative requirements would not be effective to detect the presence of and provide for the removal of the sensing line caps.

3. Corrective Steps Which Have Been Taken and The Results Achieved

3.1 The containment pressure sensing lines are capped, and this capping is controlled and documented through the use of the temporary modification system.

4. Corrective Action Which Will Be Taken

4.1 To enhance the control of activities during the startup period, work will be performed under an approved work control program. (See Attachment A, pages 10-16.) This action will provide assurance that changes to the configuration of a system are approved and documented.

4.2 Additionally, Bechtel Construction Work Plan Procedures (WPP/QCI) are being revised to require that work performed on a system which has been jurisdictionally transferred to the APS Startup organization be authorized in writing by the APS Startup organization.

4.3 Station Manual Procedure 41ST-1ZZ13 will be revised to specifically address removal/verification of removal of containment pressure sensing line caps prior to entry into Mode 5.

4.4 Similarly, the Surveillance Procedure 36-ST-9SB03, which is done on a refueling outage frequency,

11 include a step that requires a blowdown and visual inspection of the lines.

5. Dates When Full Compliance Will Be Achieved

5.1 Full compliance has been achieved with respect to specific conditions cited.

5.2 The revisions of Station Manual Procedure 41ST-1ZZ13 and Surveillance Procedure 36-ST-9SB03 are in the approval process which will be completed on March 23, 1984 and prior to fuel load, respectively.

5.3 All other action will be completed by February 29, 1984.

PART II

RESTATEMENT OF ALLEGED VIOLATION I.A.2

"I. VIOLATIONS ASSESSED CIVIL PENALTIES

"A. 10 CFR 50, Appendix B, Criterion II, as implemented by Chapter 17 of the licensee's PSAR and FSAR, requires, in part, that: 'The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.'

"Contrary to the above requirements, the licensee's quality assurance program did not maintain adequate control over activities affecting quality as evidenced by the following examples:

. . .

"2. On September 7, 1983, the manual operator for valve SI V470 on the suction of the HPSI "A" pump was disconnected and resting on the sprinkler system piping. Construction of the subsystem had been completed, turned over to the licensee, and was undergoing preoperational testing. There was no record of the defective and/or nonconforming condition

which included a missing stud nut and leaking flange.

. . .

"This is a Severity Level III Violation, (Supplement II). (Civil Penalty-$40,000)"

APS RESPONSE TO ALLEGED VIOLATION I.A.2

1. Admission or Denial of Violation

1.1 APS admits the allegations in paragraph I.A.2 of the Notice that:

1.1.1 On September 7, 1983, the manual operator for valve SI V470 on the suction of the HPSI "A" pump was disconnected and resting on the sprinkler system piping; and

1.1.2 There was no record of the defective and/or nonconforming condition which included a missing stud nut.

1.2 Further, in answer to the alleged violation, APS avers that, contrary to the allegations in paragraph I.A.2, the following conditions existed on September 7, 1983:

1.2.1 Preoperational testing of the subsystem was in progress.

1.2.2 The subsystem had not been presented for acceptance nor accepted by PVNGS Nuclear Operations.

1.2.3 Preoperational Testing required prior to acceptance of the subsystems of PVNGS Nuclear Operations would have resulted in the discovery and correction of the deficient condition.

1.2.4 The condition of the valve was in a near open position and this would have allowed the subsystem to operate in accordance with the design intent.

1.2.5 The valve is used in the subsystem only to provide isolation during maintenance or repair of the HPSI "A" pump.

1.2.6 The condition of the valve in the subsystem, if left uncorrected, would have had no impact on the safe operation of the HPSI system, and, therefore, was not significant to safety.

1.3 In light of the foregoing admissions and averment of facts, APS denies that the undocumented status or condition of the subsystem on September 7, 1983, constituted a violation of any Regulatory Requirement for which the assignment of Severity Level III is permitted under Appendix C to 10 CFR Part 2. In support thereof APS states:

1.3.1 Appendix C to 10 CFR Part 2 provides that Severity Level V is to be assigned to violations that have minor safety or environmental significance. Severity Level IV is to be assigned were the violation is "of more than minor concern, i.e. if left uncorrected, [it] could lead to a more serious concern." [Emphasis supplied.]

1.3.2 Since the nonconforming condition has been determined to have no safety significance even if left uncorrected, it is not proper to assign Severity Level III to the violation.

1.3.3 The violation is distinguishable from the other examples cited in the Notice (see Attachment E, pages 3, 4, 9, 10), and therefore the only basis on which the assignment of Severity Level III may be, i.e., "multiple examples," does not exist.

2. Reasons for the Conditions Existing on September 7, 1983

2.1 Two problems existed which resulted in the condition found. First, the bridle which was supplied by Roto Hammer was too short, thereby, allowing the rising stem to contact the top of the bridle before full valve opening was achieved. Second, with the adapter retaining nut missing, the rising stem pushed the bridle/adaptor assembly up and off the stem nut, disengaging the actuator from the valve.

2.2 Investigation of these problems reveals that the remote actuator was installed by Bechtel in January, 1983, after the system had been transferred to the APS Startup organization. There is no procedural requirement to inspect the length of the bridle to confirm the vendor chose and supplied the required size to accommodate valve stem travel.

2.3 After installation of the remote operator and stroking in January, 1983, and before the last known operation in August, 1983, the valve was disassembled and improperly reassembled. This resulted in the missing adaptor retaining nut, the missing bonnet stud nut, the loose bonnet bolts, and the leaking bonnet flange.

3. Corrective Steps Which Have Been Taken and The Results Achieved

3.1 The noted deficiencies were corrected as documented by SFR 1SI-292.

3.2 The condition has been evaluated for safety significance. The observed condition, if left uncorrected, would have had no impact on the safe operation of the HPSI system. The valve was in a near open position and this would have allowed the system to operate as per design intent. The valve is used in the system only to provide isolation when servicing the HPSI "A" pump. The final report for DER 83-87 will document this evaluation.

3.3 Roto Hammer has been notified of this condition and is supplying the correct assemblies for Units 2 and 3.

3.4 Construction has revised the installation procedure (Special CIP 521.0) to require documented verification that the bridle being installed is the size specified for the particular valve for all future installations on the project.

4. Corrective Steps Which Will Be Taken

4.1 The Construction Inspection Procedures will be revised to clarify the method of ensuring that the position indication is proper. Additionally,

Bechtel Engineering is preparing a walkdown package to reinspect all safety-related valves in Units 1 and 2 utilizing Roto Hammer remote operators. Any nonconforming conditions will be documented and included in the final report to DER 83-87.

4.2 To assure that work performed during startup is properly controlled, work performed on any permanent plant equipment will be performed under an approved Work Control Program. This will ensure that any changes to, or deviations from the plant design configuration, either temporary or permanent, are approved and documented prior to beginning the work activities. Performance of work or test activities on any permanent equipment within APS' jurisdictional control will be required to be concurred with by the Unit Shift Supervisor for the unit affected. The above requirements will ensure that the plant design configuration and system status are maintained in a known, approved state. (See Attachment A, pages 11, 15.)

4.3 APS will expand the Startup Work Authorization (SWA) procedure such that when a discrepancy is observed on equipment in the startup jurisdiction, a SWA or Startup Field Report (SFR) will be initiated. A copy of the SWA will be forwarded to

the Unit Shift Supervisor for his information and to determine if a tag should be hung to identify the problem locally. All tags will be tracked and controlled by Operations personnel, with a copy of closed SWA's also forwarded to the Shift Supervisor to allow timely removal of tags.

4.4 The operations phase Work Control Procedure will be similarly expanded to assure prompt identification of discrepancies, local identification tagging of previously identified significant problems, and tracking of tags until resolution.

4.5 Before acceptance of a system or subsystem by PVNGS Nuclear Operations from the PVNGS Startup organization, a PVNGS Nuclear Operations acceptance walkdown will be conducted on the system to confirm that the system configuration is in accordance with design.

4.6 APS project management will issue a directive to all PVNGS Startup and Nuclear Operations personnel informing them of their responsibility to identify, pursue, and assure resolution of discrepancies identified in an expeditious manner. Personnel will also be instructed not to perform work without the proper authorization and controls.

4.7 Locked open/closed safety-related major flow path valves (not including such valves as instrument

root, vent and drain valves) in Unit 1 without remote position indication will be operated to verify operability and position indication, prior to fuel loading.

4.8 A generic surveillance test procedure will be developed to verify all major flow paths valves in Units 2 and 3 of PVNGS are fully operable and position indication is representative of valve position.

4.9 The appropriate operations phase generic valve repair procedures will include requirements to verify valve operability and position indication prior to return to service. This will be completed prior to fuel loading.

5. Date When Full Compliance Will Be Achieved

5.1 The deficient condition of valve SI V470 has been corrected.

5.2 The corrective action specified in paragraphs 4.1, 4.2, 4.3 and 4.6 will be completed by February 15, 1984.

5.3 The corrective action specified in paragraphs 4.4, 4.5, 4.7, 4.8 and 4.9 will be completed prior to fuel loading.

5.4 The final report for DER 83-87 will be issued by April 15, 1984.

PART III

RESTATEMENT OF ALLEGED VIOLATION I.A.3.

"I. VIOLATIONS ASSESSED CIVIL PENALTIES

"A. 10 CFR 50, Appendix B, Criterion II, as implemented by Chapter 17 of the licensee's PSAR and FSAR, requires, in part, that: 'The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.'

"Contrary to the above requirements, the licensee's quality assurance program did not maintain adequate control over activities affecting quality as evidenced by the following examples:

. . .

"3. On September 28, 1983, the position indicator for valve SI V402 on the suction of the HPSI "B" pump was positioned so that the valve could only be opened 30 to 35 percent of its full open position. Construction of this subsystem had been completed, turned over to the licensee, and was undergoing preopera-

tional testing. There was no record of the defective and/or nonconforming condition.

. . .

"This is a Severity Level III Violation, (Supplement II). (Civil Penalty-$40,000)"

APS RESPONSE TO ALLEGED VIOLATION I.A.3

1. Admission or Denial of Alleged Violation

1.1 APS admits the allegations in paragraph I.A.3 of the Notice that:

1.1.1 On September 28, 1983, the valve could only be opened 30 to 35 percent of its full open position.

1.1.2 There was no record of this condition.

1.1.3 The subsystem of which the valve is a component had been transferred by Bechtel construction to the APS Startup organization.

1.1.4 Preoperational Testing of the subsystem was in progress in September, 1983.

1.2 In answer to the alleged violation, APS avers that the following conditions existed on September 28, 1983:

1.2.1 The subsystem had not been presented for acceptance nor accepted by PVNGS Nuclear Operations.

1.2.2 Preoperational testing of the subsystem had not been completed.

1.2.3 No work on the valve had been performed which had not been properly controlled by work control procedures.

1.2.4 The condition of the valve was such that it could have been opened sufficiently to allow the subsystem to operate in accordance with the design intent.

1.2.5 The condition of the valve, if left uncorrected, would have had no impact on the safe operation of the HPSI System, and, therefore, was not significant to safety.

1.3 In light of the foregoing admissions and averments of fact and the matters stated in Attachment B, pages 6-7, APS denies that the undocumented condition of the subsystem existing on September 28, 1983, constituted a violation. In support thereof APS states as follows:

1.3.1 The discrepant condition was not significant to safety and therefore did not constitute a Severity Level III violation.

1.3.2 Appendix C to 10 CFR Part 2 provides that Severity Level V is to be assigned to violations that have minor safety or environmental significance. Severity Level IV is to be assigned where the violation is "of more than minor concern, i.e., if left uncorrected, [it] could lead to a more serious condition." [Emphasis supplied.]

1.3.3 Since the nonconforming condition has been determined to have no safety significance even if left uncorrected, it is not proper to assign Severity Level III to the violation.

1.3.4 The violation is distinguishable from the other examples cited in the Notice (see Attachment E, pp. 3, 4, 9, 10), and therefore the only basis on which the assignment of Severity Level III may be made, i.e., "multiple examples," does not exist.

2. Reasons for the Conditions Existing on September 28, 1983

2.1 During the installation of remote operators, Construction is not required to verify length of stroke. The valve is stroked by an APS operator using the remote operator from stop to stop. In this case, the travel was restricted by the valve stem position indicator nut not being properly set on the valve stem. The indicator nut hit the top of the valve yoke and prematurely stopped valve travel in the open direction. Since the valve is stroked remotely, it would not be obvious that valve travel was being restricted. Therefore, the APS operator and Construction Engineer assumed the valve was full open when, in fact, it was not.

2.2 The HPSI system was being tested at the time of the inspection. Testing has not been completed.

3. Corrective Steps Which Have Been Taken and the Results Achieved

3.1 The restriction on the operation of valve SI V402 to 30 to 35 percent of its full open position

caused by the position indicator has been evaluated for safety significance. The observed condition, if left uncorrected, would not preclude the operation of the HPSI system in accordance with design intent. Bechtel Engineering has performed an evaluation which verifies that the system will perform to design intent with the valve open only 30 to 35 percent. This evaluation has been confirmed with Borg Warner, the valve supplier, via telephone notes TN-E-3516. The final report for DER 83-87, initiated to address flow restriction due to deficiencies in SI V470, will contain the evaluation which documents this analysis.

3.2 Construction has revised the installation procedure (Special CIP 521.0) to require verification that the stem is free to travel from full closed to full open without interference.

4. Corrective Steps Which Will Be Taken

4.1 The deficiency noted on SI V402 will be addressed as part of the valve stroking required by Work Order 024447 and SWA 15578.

4.2 To ensure that no other similar deficiencies exist and that none will occur in the future, the Construction Inspection Procedures will be revised to clarify the method to ensure that the position indication is proper.

4.3 Locked open/closed safety-related major flow path valves (not including instrument root, vent and drain valves) in Unit 1 without remote position indication will be operated to verify operability and position indication, prior to fuel loading.

4.4 A generic test procedure will be developed to verify all major flow path valves in Units 2 and 3 of PVNGS are fully operable and position indication is representative of valve position.

4.5 The appropriate operations phase generic valve repair procedures will include requirements to verify valve operability and position indication prior to return to service. This will be completed prior to fuel loading.

5. Date When Full Compliance Will Be Achieved

5.1 The deficient condition of valve SI V402 will be corrected prior to acceptance of this subsystem by PVNGS Nuclear Operations.

5.2 The corrective action specified in paragraph 4.2 will be completed by February 15, 1984.

5.3 The corrective action specified in paragraphs 4.3, 4.4 and 4.5 will be completed prior to fuel loading.

5.4 The final report for DER 83-87 will be issued by March 15, 1984.

PART IV

RESTATEMENT OF ALLEGED VIOLATION I.A.4.

"I. VIOLATIONS ASSESSED CIVIL PENALTIES

"A. 10 CFR 50, Appendix B, Criterion II, as implemented by Chapter 17 of the licensee's PSAR and FSAR, requires, in part, that: 'The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.'

"Contrary to the above requirements, the licensee's quality assurance program did not maintain adequate control over activities affecting quality as evidenced by the following examples:

. . .

"4. On September 14, 1983, 87 3/8-inch bolts were missing from the base frames for six motor control centers (MCC's) of the vital AC onsite power distribution system. These bolts are necessary to ensure the structural integrity of the MCC's.

"This is a Severity Level III Violation, (Supplement II). (Civil Penalty-$40,000)"

APS RESPONSE TO ALLEGED VIOLATION I.A.4

1. Admission or Denial of Violation

1.1 APS denies that on September 14, 1983, 87 3/8-inch bolts were missing from the base frames for six motor control centers (MCC) of the vital onsite power distribution system.

1.2 APS denies that any bolts which are necessary to ensure the structural integrity of the MCC's are missing.

1.3 Accordingly, APS denies the alleged violation.

1.4 In support of such denial, APS submits that it is apparent from the CAT Inspection Report, dated November 11, 1983, and the Notice that no specification or other requirement has been cited to establish the number or sizes of bolts required for mounting MCC's to maintain their structural integrity. It appears that (i) the allegation that 87 bolts are missing resulted from counting unused holes in the base frames for six MCC's and (ii) the allegation that all or some of the "missing" bolts are necessary to ensure structural integrity is based on an unsupported assumption.

2. Reason for the Conditions Observed

2.1 The NEMA III nonwalk-in cabinets which house the motor control centers (MCC's), tag nos. 1-E-PHA-M33, 35, 37 and 1-E-PHB-M34, 36 and 38, were con-

structed and mounted per General Electric installation drawings.

2.2 See Figures 1 and 2 for the connection details and the location of the bolts on the front and back side of the cabinets, respectively. The lifting lugs as shown on the vendor drawings were used to handle the NEMA III cabinets during shipping from Mebane, North Carolina, to the Palo Verde jobsite, and during their installation. After completing the installation, the lifting lugs were removed as they created a safety hazard by protruding into aisle space. The installation drawings did not indicate that the lifting lugs must remain in place, and since the lugs posed a safety hazard by projecting into the walkways, it was deemed appropriate that they be removed.

2.3 On the front side of the cabinets (See Figure 1), the four 3/8-inch diameter bolts (Item 1) that the lifting lug fits over were either removed when the lifting lugs were removed, or were never installed by General Electric (GE) prior to shipment. For the front side, the 3/8-inch diameter bolts serve as part of the connection between the front base channel (C6) and a parallel channel (C4) which, in turn, is connected to a transverse channel (C4). On the back side of the cabinets (see Figure 2),

the two 5/8-inch diameter bolts (Item 6) which connect the lifting lug to the base channel (C6) were not reinstalled after the lifting lugs were removed. It was not apparent from the vendor drawings that these bolts also serve as part of the connection between the back base channel (C6) and a parallel channel (C4) which, in turn, is connected to a transverse channel (C4).

2.4 The front and back connections of the cabinet at each lifting lug location have other bolts which were in place after removal of the lifting lugs.

2.5 Since the drawing did not adequately specify the bolting arrangement with the lifting lug removed, the subject bolts were overlooked during a subsequent Bechtel Engineering audit of safety-related equipment installations attached to structures. The audit was concerned with as installed attachment of the equipment to the structure (i.e., slab and wall) compared to the installation drawings and the qualification report and did not review the assembly of the cabinets. It should also be noted that the audit team found that the installation of the MCC's and the NEMA III cabinets was incomplete, that the MCC's mounted in the NEMA III cabinets were not consistent with the qualification of the MCC's, and that an engineering evalua-

tion was required. As a result of the engineering evaluation, DCP 1SE-PH-035 was issued to have the installation modified. However, the original issue of the DCP did not address the subject bolts.

2.6 As a final point, it may be stated that the installation of these MCC's is unique, because these MCC's are the only type mounted inside NEMA III cabinets which are designed to protect the electrical equipment from the effects of the Auxiliary Building sprinkler system. No other safety-related equipment is installed in this manner.

3. Corrective Steps Which Have Been Taken and the Results Achieved

3.1 Bechtel Engineering investigated the alleged violation concerning missing bolts from the base frames as shown in Figures 1 and 2 for the six motor control centers (MCC's). The results of the investigation as documented in calculation 13-CC-ZQ-E01, Revision 2, indicated that the seismic qualification of the MCC's would not be invalidated under the as-installed condition, nor would the condition affect the structural integrity of the system under any design loading. General Electric has reviewed the results of the Bechtel analysis and concurs with the conclusions. (TN-

E-3503, dated 12/27/83, and B/ANPP-E-110302, dated 12/29/83). Therefore, the missing 3/8-inch diameter bolts from the base frames for six motor control centers of the vital AC onsite power distribution system are not necessary to ensure the structural integrity of the MCC's. The final report for DER 83-84 will document this evaluation.

4. Corrective Steps Which Will Be Taken

4.1 Although the missing four 3/8-inch diameter bolts on the front side and the two 5/8-inch diameter bolts on the back side of each lifting lug location are not considered safety significant and are not required, they will be installed in Unit 1 per revised and clarified GE drawings and as documented by DCP 1SE-PH-035, Modification 1.

4.2 Installation work, using updated and clarified drawings in Units 2 and 3, is currently ongoing and installations will be completed in accordance with these documents.

4.3 Bechtel Construction Work Plan Procedure (WPP/QCI) 258.0 is being revised to require Engineering approval prior to the removal of any temporary attachment from installed equipment.

4.4 Bechtel has initiated a review of the documents of safety-related equipment installations in Unit 1,

2 and 3 attached to structures to permit a selective verification such installations as appropriate. The review and verification will determine if the safety-related equipment was installed per vendor drawings and instructions. The results will be documented by DER 83-84.

5. Date When Full Compliance Will Be Achieved

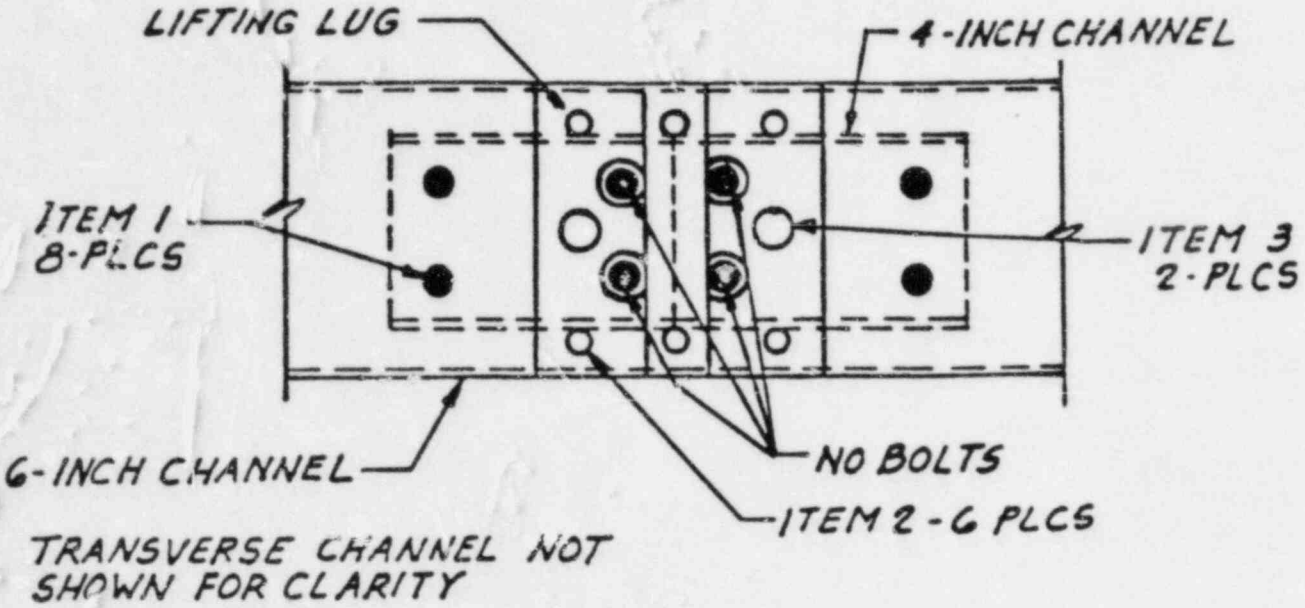
5.1 A PCN to WPP/QCI 258.0 will be issued by January 31, 1984.

5.2 Design Change Packages 1SE/2SE/3CE-PH-035 will be completed prior to fuel load in each unit.

5.3 The final report for DER 83-84 will be issued by May 15, 1984.

5.4 The four 3/8-inch diameter bolts and two 5/8-inch diameter bolts for Unit 1 MCC's will be installed prior to fuel load.

FIGURE 1 - FRONT LIFTING LUG ASSEMBLY (Two per cabinet)



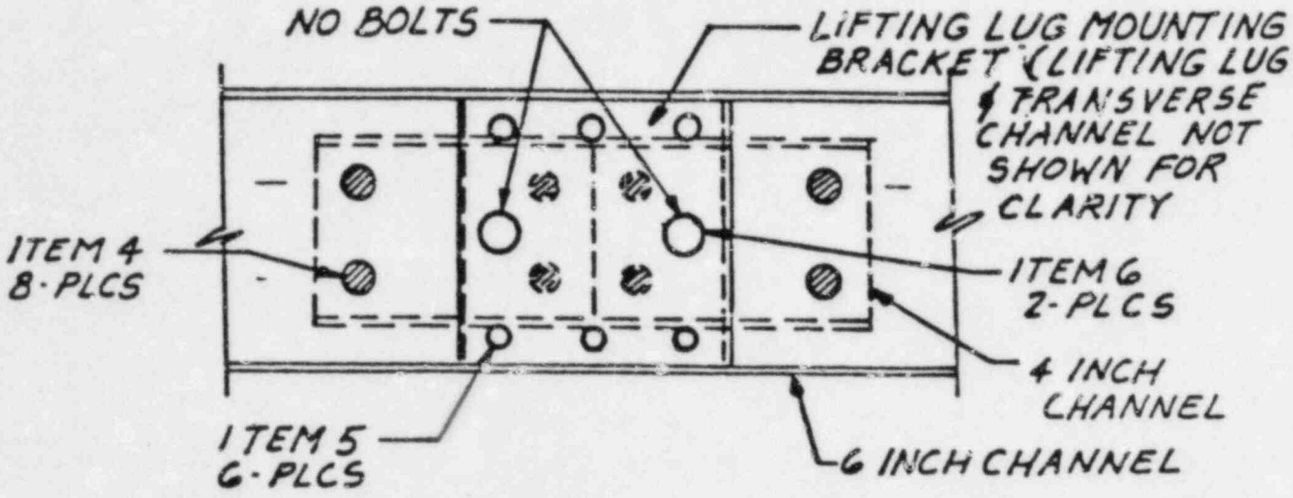
Item 1 - Holes for 3/8 inch diameter mounting bolts which attach the C4 support girt to the C6 base. These bolts are required after lifting lug removal.

Item 2 - Mounting holes for the lifting lugs attachment bolts. No bolts are required after lifting lug removal.

Item 3 - Holes for 5/8-inch diameter bolts used to attach the lifting lug. These bolts are not required after lifting lug removal.

Note A - After lifting lug removal 2-5/8-inch diameter bolts (Item 3) may be installed as a substitute for the 4-3/8-inch diameter bolts (Item 1).

FIGURE 2 - BACK LIFTING LUG LOCATION (Two per cabinet)



Item 4 - Holes for 3/8-inch diameter mounting bolts which attach the C4 support girt to the C6 base (See Note B).

Item 5 - Mounting holes for the lifting lug attachment bolts. No bolts are required after lifting lug removal.

Item 6 - Holes for 5/8-inch diameter bolts used to attach the lifting lug. These bolts are required to be reinstalled after lifting lug removal.

Note B - The C6 lifting lug mounting bracket, which is welded in place, covers the four middle 3/8-inch diameter bolt locations. This makes installation of the middle 3/8-inch diameter bolts impossible. The two 5/8-inch diameter bolts shall be reinstalled as a substitute after lifting lug removal.

ATTACHMENT D

APS RESPONSE TO SECTION II

OF THE NOTICE OF VIOLATION FOR

WHICH NO CIVIL PENALTY is PROPOSED

APS RESPONSE TO SECTION II
OF THE NOTICE OF VIOLATION FOR
WHICH NO CIVIL PENALTY IS PROPOSED

PART I

NOTICE OF VIOLATION II.A.

"Appendix B of 10 CFR 50, Criterion V, as implemented by Chapter 17 of the licensee's PSAR and FSAR requires, in part, that: 'Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances, and shall be accomplished in accordance with these instructions, procedures, or drawings.'"

VIOLATION II.A.1

"1. The separation and identification criteria as identified in FSAR Section 8.3.1 are described, in part, by the following Bechtel documents: (a) "Cable and Raceway Physical Separation Guide," Drawing 13-E-ZAC-077, Revision 2, and (b) "Installation Specification for Cable Splicing, Termination and Supports," Specification No. 13-EM-306, and "Installation Specification for Electric Cables and Cable Trays," Specification No. 13-EM-300.

"Tray fill requirements in the above specifications requires that cabling in random filled cable trays shall not extend above the side rails of the tray.

"Contrary to the above requirement, in random filled tray 1EZJ4AATSCE, cables were projecting above the level of the tray side rails."

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.A.1

(1). Admission or Denial of the alleged Violation:

The violation is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6-7.

(2). Reasons for the Violation:

This specific condition concerns a case which occurred due to the close proximity of an HVAC duct to the tray in a congested area.

(3). Corrective Action Steps Which Have Been Taken and Results Achieved:

The noted deficiency has been documented on NCR EJ-3403 and dispositioned "rework". The corrective action for this case requires the control cables in the tray to be reorganized to provide clearance with an HVAC duct.

Overfilled trays are not a repetitive problem, because tray fill is monitored by the EE580 Circuit and Raceway Program. When 30 percent fill

is reached (e.g., this is the ratio of cross-sectional area of tray to cross-sectional area of the cable) the computer program refuses to accept any more cable in that tray section. At that time, the designer has the option of overriding the computer restriction and including additional cables, provided that an evaluation is performed to establish that heat load criteria are not exceeded and that cable tray is not filled beyond a reasonable capacity to contain the cable. Based on positive results from the evaluation of each such case, the 30 percent computer fill may be exceeded. Thirty percent computer fill in general corresponds to 100 percent tray fill since the cables become interwoven during the pulling process. Where there is no safety impact, tray fill is allowed to go above the side rails. Specification 13-EM-300 has been revised by FCR 72.521-E to permit cables to extend above the tray rails where there is no tray cover, provided that proper separation has been maintained. Transfer Procedure (WPP/QCI)31.0 has been revised to provide that no cable is in contact with other equipment. Bechtel supervision in Unit 1 conducted a training session with eight electricians on the revised specification requirements. The electricians con-

ducted a 100 percent review of all Unit 1 uncovered cable trays. Conditions found which deviate from the revised specification requirements/allowances are being corrected.

Bechtel Construction has reviewed this same installation in Units 2 and 3 and has taken steps to overcome the congestion caused by the HVAC duct.

(4). Corrective Steps Which Will Be Taken To Avoid Further Violations:

To preclude recurrence of nonconforming tray fill in Units 2 and 3, a PCN to Bechtel Construction Work Plan Procedure (WPP/QCI) 31.0 is being prepared to require an inspection for tray fill to the requirements of Specification 13-EM-300 as described above at the time of the area release walkdown prior to acceptance by Nuclear Operations.

Field Engineering and QC will perform a 100 percent reinspection of all safety-related uncovered cable trays in Unit 1. Unit 2 will reinspect any safety-related cable tray that has been released to PVNGS Nuclear Operations. All deviations found will be corrected.

(5). Date When Full Compliance Will Be Achieved:

The completed reinspection of Unit 1 will be completed by March 1, 1984.

Inspections of Unit 2 and 3 will be completed prior to fuel load of each unit. Project Quality Program Manual, Procedure 18.6 - Project Quality Assurance Surveillances - will be revised to specifically establish a monthly program for an overview of previously accepted installation by QC by February 28, 1984

VIOLATION II.A.2

"2. The separation requirement, as described in the above specifications, identifies the minimum separation distance between safety-related open-top trays and non-safety-related totally enclosed trays or raceways (conduit) as one inch.

"Contrary to the above requirements:

"a. Non-safety-related conduit 1EZADCNRQ506 for thermostat 1EQFNT1243C in HPSI A pump room was separated from safety-related group 1 junction box 1EZACCAKKJ03 by less than one inch.

"b. At diesel generator E-PEA-G01, non-safety-related flexible conduit 1EZG1ANRX11 at junction box 4 was in contact with safety-related flexible conduit 1EZG1AARR20 at junction box 6.

"c. In 4160-volt switchgear cubicle E-PBA-503L [sic], non-safety-related flexible conduit

1EZJ1ANRR52 was separated from safety-related wiring by less than one inch (required separation is one inch).

"d. In 4160-volt switchgear cubicle E-PBA-503K [sic], non-safety-related flexible conduit 1EZJ1ANRR51 was separated from safety-related wiring by less than one inch (required separation is one inch).

"This is a Severity Level IV Violation (supplement II)."

RESPONSE TO VIOLATION II.A.2

(1). Admission or Denial of the Alleged Violation:

The conditions described do exist, but items "a" and "b" are not violations because the PVNGS FSAR or quality program addresses them. Item "a" is not a violation of separation criteria requirements because conduit 1EZADCNRQ506 is for a telephone circuit. Low-voltage circuits for telephone and/or computer systems have been analyzed and found as having no adverse effect on adjacent Class IE cables; therefore, they are considered exempt from the separation criteria requirement. A change to the FSAR, SARCN1114, was initiated prior to the inspection (8/25/83) to clarify that Regulatory Guide 1.75 is not applicable to low energy circuits.

Item "b" is not a violation, since the noted deficiency is in an area which has not received the final inspection and acceptance per Bechtel Construction Work Plan Procedure (WPP/QCI) 251.1. It is planned that these kinds of conditions will be identified and corrected as required by Regulatory Guide 1.75 during completion of walkdown, which is specifically designed to focus on all tray, conduit, and wiring separation requirements. The walkdowns per WPP/QCI 251.1 have not been completed in many areas of Unit 1 because the implementation of late design changes in many cases would have impacted compliance with the separation requirements.

The violation described in Items "c" and "d" is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2). Reasons for the Violation:

The root cause of the violation described in Items "c" and "d" can not be positively identified. The Class 1E vendor installed wiring within the cabinet may have been moved or disturbed during work or testing to come within one inch of the non-Class 1E flexible conduit. Alternately, the flexible conduit may have been installed incorrectly.

(3). Corrective Actions Taken to Date and Results Achieved:

The specific conditions found were documented on Startup NCR's SE-2916 and SE-3293 or corrected on the spot.

To broaden the data base for evaluation of the conditions originally found, Bechtel Construction conducted a similar review on the Containment Spray Pump "A-Train" and the Charging Pump "A-Train". One other separation problem was identified during this review and was documented on NCR EJ-3646. The conditions of noncompliance with separation criteria applicable to conduit installations as documented by the referenced NCR's have been reviewed for safety significance. The review indicates that the conditions, which are all considered minor, if left uncorrected would have no impact on the ability to operate the plant and/or achieve a safe shutdown. The final Construction QC walkdown inspections for conduit-to-conduit and conduit-to-tray have not been completed by Construction and Quality Control. The list of released areas not inspected per WPP/QCI 251.1 has been submitted for inclusion into the Master Tracking System (MTS) to assure completion prior to fuel load.

(4). Corrective Steps Which Will be Taken to Avoid Further Violations:

To assure compliance with these requirements Construction will conduct retraining sessions with Field Engineers and QC Engineers to re-emphasize the importance of separation inspections.

Inspection for separation is currently covered in the installation procedures and documented on raceway installation and termination cards. The separation inspection required by WPP/QCI 251.1 may or may not be completed as part of the area release walkdown required by WPP/QCI 31.0. A PCN to WPP/QCI 31.0 is being prepared to require a note on the area release document noting that the 251.1 walkdown has not been completed as part of (or before) the area release walkdown. This will provide that the open item will be tracked on MTS.

The Field QA Surveillance Program will be upgraded to include a selective sampling of QC accepted installations on a monthly basis to continually assess effectiveness of the inspection program in vital areas of tray and conduit.

SAR Change Notice 1142 has been initiated to clarify that Regulatory Guide 1.75 is not applicable to low energy circuits such as telephone and paging circuits. This SAR Change Notice provides

additional clarification to that already provided concerning low energy circuits such as fire detection, previously provided in SAR Change Notice 1114.

(5). Date When Full Compliance Will be Achieved:

- o Completion of all Unit 1, 2, and 3 walkdown inspections will be completed prior to fuel load for each unit.
- o The revision to WPP/QCI 31.0 and the associated retraining session will be completed By February 15, 1984.
- o SAR Change Notices 1142 and 1114 will be incorporated into a future amendment of the FSAR.
- o Project Quality Program Manual, Procedure 18.6 - Project Quality Assurance Surveillance - will be revised to specifically establish a monthly program for an overview of previously accepted installations by QC by February 28, 1984.

VIOLATION II.A.3

"3. The separation requirement as described in the above specifications requires that each circuit and raceway be given a unique permanent alphanumeric identification and colored dots (round emblems) along their lengths at intervals not greater than 15 feet.

"Contrary to the above requirements:

"a. A separation group 1 cable tray located in HPSI pump room A was not marked with red color identification (round emblems) between points 1EZACEATCBA and 11EZACCARC03.

"b. Round blue identification emblems were missing from channel D conduit (PT-351) for a distance of approximately 40/50 feet at the 120 feet elevation.

"c. Temporary alphanumeric identification on cable tray 1EZAIDBTXCF had not been replaced with permanent identification.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.A.3

(1). Admission or Denial of Alledged Violation:

The violation is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2). Reasons for the Violation:

For items "a" and "b", the project has experienced problems with retaining these markings in place. These markings were disturbed and fell off. For item "c", the work had not been completed due to an oversight.

(3). Corrective Steps Which Have Been Taken and Results Achieved:

The specific problems identified were corrected as follows:

a. Red dot missing in HPSI "A" room corrected on the spot.

b. Blue emblems missing for 40 to 50 feet at 126 elevation corrected on the spot.

c. Temporary I.D. was replaced by permanent I.D. as documented on NCR EA-3332.

To broaden the data base for evaluation, Construction conducted a review of raceways associated with Charging Pump "A-Train" and Containment Spray Pump "A"-Train" for similar raceway identification problems. Of 220 raceways reviewed, 13 were found to have some deficiency. These are documented on NCR's EJ-3645 and EJ-3647. As a result of this evaluation, a 100 percent reinspection program for safety-related raceway will be implemented in Unit 1 to assure compliance with this requirement.

The condition of missing raceway/conduit alphanumeric identifications and color codings as identified by the NRC violation have been evaluated for safety significance. The evaluation indicates that the noted conditions, if left un-

corrected, would have no impact on the ability to operate the plant and/or achieve a safe shutdown , since the cables are also color coded. The condition does not constitute a significant construction deficiency requiring extensive repair or redesign to establish conformity with design requirements.

(4). Corrective Steps Which Will be Taken to Avoid Further Violations:

To preclude recurrence in Units 2 and 3, PCN 57 has been issued to WPP/QCI 31.0 requiring raceway identification verification at the time of area release walkdown.

Field Engineering and QC Engineering personnel will be trained regarding the additional inspection element added as a result of the procedural revision.

The Field QA Surveillance Program will be upgraded to include a selective sampling of QC accepted installations on a monthly basis to continually assess effectiveness of the inspection program in vital areas of raceway identification.

(5). Date When Full Compliance Will be Achieved:

Retraining of responsible personnel, and completion of the 100 percent reinspection program for Unit 1 will be completed by March 15, 1984.

- Project Quality Program Manual, Procedure 18.6 - Project Quality Assurance Surveillance - will be revised to specifically establish a monthly program for an overview of previously accepted installations by QC. This revision will be issued by February 28, 1984.

VIOLATION II.A.4

"4. IEEE Standard 384-1974, 'Criteria for Separation of Class IE Equipment and Circuit Breakers,' endorsed by the Licensee in Section 8.3.1 of the FSAR in Section 5.1.2, states, in part, 'Exposed Class IE Raceways shall be marked in a permanent manner at points of Entry and Exit from an Enclosed Area.'

"Contrary to the above requirements, at the time of the inspection, the following separation group I conduits were not identified by alphanumeric markings:

"a. Conduits 1EZJ1AARC12, 14, and 16 on both sides of the wall between group I, 4.16 KV switchgear area and channel A remote shutdown panel area at the 100-feet elevation.

"b. Conduit sleeves 1EZJ1BARC13, 14, and 15 on control building wall in channel B remote shutdown area at the 100-foot elevation.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.A.4

(1). Admission or Denial of the Alleged Violations:

The violation is admitted but the Severity Level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2). Reasons for the Violation:

The first condition is attributed to an oversight by the Field Engineer. The omission is attributed to oversights by area release walkdown personnel; this requirement was not included as a specific inspection element in the Construction walkdown procedure.

(3). Corrective Steps Which Have Been Taken and Results Achieved:

The specific problems identified were corrected on the spot.

To broaden the data base for evaluation, Construction conducted a review of raceways associated with Charging Pump "A-Train" and Containment Spray Pump "A-Train" for similar raceway identification problems. Of 220 raceways reviewed, 13 were found to have some deficiency.

These are documented on NCR's EJ-3645 and EJ-3647. As a result of this evaluation, a 100 percent reinspection program for safety-related raceway will be implemented in Unit 1 to assure compliance with this requirement.

The conditions of missing raceway/conduit alphanumeric identifications and color codings as identified by the NRC violation have been evaluated for safety significance. The evaluation indicates that the noted conditions, if left uncorrected, would have no impact on the ability to operate the plant and/or achieve a safe shutdown. The condition does not constitute a significant construction deficiency requiring extensive repair or redesign to establish conformity with design requirements.

(4). Corrective Steps Which Will be Taken to Avoid Further Violations:

To preclude recurrence in Units 2 and 3, PCN 57 has been issued to WPP/QCI 31.0 requiring raceway identification verification at the time of area release walkdown.

Field Engineering and QC Engineering personnel will be trained regarding the additional inspection element added as a result of the procedural revision.

The Field QA Surveillance Program will be upgraded to include a selective sampling of QC accepted installations on a monthly basis to continually assess effectiveness of the inspection program in vital areas of raceway identification.

(5). Date When Full Compliance Will Be Achieved:

Retraining of responsible personnel, and completion of the 100 percent reinspection program in Unit 1 will be completed by March 15, 1984.

Project Quality Program Manual will be revised to specifically establish a monthly program for an overview of previously accepted installations by QC by February 28, 1984.

PART II

NOTICE OF VIOLATION.II.B.

"Appendix B of 10 CFR 50, Criterion V, as implemented by Chapter 17 of the Licensee's PSAR and FSAR requires, in part, that: 'Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances, and shall be accomplished in accordance with these instructions, procedures, or drawings.'

"Contrary to the above requirement and the specifications listed below, the following conditions existed at the time of the inspection."

VIOLATION II.B.1.

"1. Section 11.0 of Bechtel Specification 13-CM-320, 'Erection of Structural and Miscellaneous Steel,' states, in part: 'Installation shall be in accordance with AISC 'Specification for Structural Joints using ASTM A325 or A490 bolts.' Paragraph 5(a) of the AISC specification requires that A325 bolts, 7/8-inch diameter be tightened to at least a minimum tension of 39 Kips. An acceptable method of obtaining this tension is described in paragraph 5(c), 'Turn-of-Nut Tightening,' which requires that bolts be brought to a 'snug tight' condition plus an additional 1/3 to 2/3 turn, depending on the bolt length.

"Contrary to these requirements, on September 5 and 13, 1983, four A325 bolts were finger loose. Using a calibrated torque wrench, two A325 bolts showed a tightness of less than 39 Kips. These bolts were located in the structural steel beams as itemized in NRC Inspection Report No. 50-528/83-34, pages VII-3&4. "This is Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.B.1

(1) Admission or Denial of the Alleged Violation:

The violation is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2) Reasons for the Violation:

(a) Loose Bolts:

The NRC performed visual inspection of 368 bolted connections of platform and structural steel in the Auxiliary and Containment buildings. Four bolts were found in one connection of an Auxiliary Building personnel access platform which were "finger loose." During a review after the NRC identified the loose bolts, Bechtel QC identified two additional bolts in another connection of the same platform which were also "finger loose." Bechtel Quality Assurance performed a similar visual surveillance of 43 connections and

found no loose bolts; however, one bolt did not meet the specified thread engagement. (Reference NCR CC-4333). Subsequent to this, Bechtel Engineering performed a visual review of structural steel connections in the Auxiliary and Containment Buildings of Units 1, 2 and 3. A total of 361 connections containing 2,192 bolts were reviewed. One connection containing four "finger loose" bolts, one connection with one loose bolt, and one connection with one bolt having insufficient thread engagement were identified. These connections were in the Unit 1 Containment Building at elevation 120'-0".

In the cases found by these inspections, the loose bolts tend to be located in clusters, not randomly located within connections and have been painted in the loosened condition indicating that proper installation was never completed. This indicates that the reason for the violation is oversight by both craft and QC inspection.

The two connections which had four loose bolts are standard AISC, bearing type, clip-angle connections consisting of six bolts in each connection. The remaining two bolts in

each of these connections were found to be tight. Per general drawing 13-C-00A-001, all structural steel bolted connections are bearing type with the maximum number of rows of bolts permittable unless noted otherwise on the design drawing. Providing this type of connection is conservative in two respects:

(1) Conservative loads are used to design the members and the connections typically are adequate with fewer than the maximum number of bolt rows.

(2) By the nature of AISC specified design allowables, design of connections is more conservative by a substantial margin than that of the connected member.

Also, bearing type connections do not rely on tension in the bolt to transfer load and, in fact, as long as the bolts remain in the connection adequate load transfer will occur. The nut in this case is purely a retaining device and theoretically could be replaced by anything which would ensure that the bolt

did not fall out of the connection (i.e., cotter pin).

This concept is reinforced in the commentary on the AISC Specification for Structural Joints (8/14/80), Section C6, page 22, where it is stated in part: ". . . The performance of the bolt in bearing is not dependent upon high tension. Visual evidence of wrench impacting is adequate indication that the nut has been tightened sufficiently to prevent it from loosening or falling off accidentally."

Combining the above facts with the results of all the inspections, which indicate 99.5% of the connections do not have loose bolts, Bechtel Engineering has evaluated that the loose bolts in bearing type connections is not prevalent and is not safety significant. No further inspection of bearing type joints is warranted.

The connection which Bechtel QC identified as having two loose bolts is a beam to wall connection consisting of three bolts total. The remaining bolt in this connection was found to be tight. This connection is typical of structural steel connections at concrete interfaces and in skewed connections in that

the holes are slotted in the horizontal direction to allow for irregularities in the cast in place concrete walls and for fabrication tolerances, respectively. If lateral loads are present that must be transmitted through these connections, then the bolts would be required to be friction-type. Although this particular joint is slotted in the horizontal direction, no horizontal loads are required to be transmitted by this connection and the vertical loads may be transferred as in a bearing type connection. The same conservatisms which were mentioned earlier also apply here. A further discussion of friction type connections is presented in Part II.B.1.b.

(b). Undertorqued Bolts:

The NRC also performed calibrated torque wrench testing on 62 high strength bolts which were not visually loose. Two bolts were determined by the NRC to show a torque or tension less than the minimum required by AISC. Bechtel Construction conducted an identical inspection of 115 other randomly selected high strength bolts and found four bolts, of the 115 bolts inspected, that were

tight but did not meet torque requirements. A further investigation was made by Bechtel Engineering by performing a calibrated torque wrench test on 180 additional bolts in the Unit 1,2, and 3 Auxiliary and Containment Buildings. This investigation indicated that 95% of the bolts checked in the Containment Buildings were torqued correctly. Of the remaining 5%, only a slight rotation (1/12 to 1/16 turn) was required to bring the bolts up to the required torque.

As before, it is pointed out that for the most part, the structural steel joints in the Containment and Auxiliary Buildings are bearing type and do not depend upon tension for load transfer. AISC uses the same installation procedure for bearing or friction type connections to minimize the changes of craft error in installing the bolts as bearing type when they should be friction type. It also ensures against accidental loosening of the nut and possible loss of the bolt from the connection.

For those joints in Containment which require friction type bolts, design margins are such that at least one bolt in any connection may

be undertorqued or even loose without affecting the load carrying capacity of the joint. The 5% of the bolts which are indicated to be undertorqued are acceptable based on this fact and the aforementioned design conservatisms. Bechtel Engineering will, however, perform a further investigation of accessible, critical, friction type connections inside the Containment to assure connection adequacy.

In the Auxiliary Building, a higher percentage of bolts than that in Containment was shown to be undertorqued. This is of little significance primarily for the following reasons:

The majority of the main structural steel in the Auxiliary Building is used for supporting the wet weight of the concrete slabs during construction. It has already served its primary function. The remaining main structural steel, which supports grating, does not have slotted holes and all connections are bearing type. The platforms inside the Auxiliary Building are for personnel access only. The steel is lightly loaded and the connections are bearing type. Secondary

steel which spans between main beams and supports HVAC ducts or cable trays in all buildings do have slotted holes in the horizontal direction. These beams are, however, lightly loaded and tension (even if it were less than the AISC minimum) in any one of the four connection bolts would provide load transfer. In the highly unlikely event that all four bolts, two on each end, were loose, structural integrity would still be maintained and failure of the beam or the system it supports would not occur. Subsequent review of the Design drawings for Category I Buildings other than the Containment show that the connections described for the Auxiliary Building are typical. It is therefore concluded that no critical friction-type connections are present in these buildings and no further investigation is warranted outside of Containment.

As a further point of information concerning this subject, the newest AISC Specification for Structural Steel Joints (8/14/80) no longer recognizes the calibrated torque wrench methodology because of "the large variability of torque-to-tension relation-

ships for seemingly similar bolts and conditions."

(3). Corrective Steps Which Have Been Taken and Results Achieved:

(a) Loose Bolts:

(i) The loose bolts in the two structural joints of platform A-C-6 at elevation 51'-6" in the Auxiliary Building which were identified by the NRC and Bechtel QC have been replaced and torqued to AISC requirements in accordance with NCR CA-4308.

(ii) The loose bolts identified by the Engineering walkdown will be corrected as documented by NCR CC-4496.

(b) Undertorqued Bolts:

(i) An inspection was made by Bechtel Engineering using a calibrated torque wrench. Although a number of bolts were found to be undertorqued, the condition is not safety significant. No further investigation is warranted in Category I buildings other than the containment.

(4). Corrective Steps Which Will be Taken to Avoid Further Violations:

(a) Loose Bolts:

(i) No further steps will be taken.

(b) Undertorqued Bolts:

(i) Since this data indicates that approximately 5% of the structural steel bolts installed may be undertorqued, Bechtel Engineering will prepare and implement a walkdown program which will provide for reinspection of the accessible critical structural steel connections in all Containment Buildings in Units 1, 2, and 3. These connections by their location and design will be determined as essential for the structures to function under design basis conditions. The connections inspected will be those which require a friction type bolt in order to transfer lateral loads. Based on the results of this reinspection program, decisions can be made on what further actions must be implemented.

The Field QA Surveillance Program will be upgraded to include a QA overview of structural steel bolt/welded connections accepted by QC on a monthly random sample. This activity is also included in the approved Field QA Audit Schedule.

(5). Date When Full Compliance Will be Achieved:

- The reinspection program of the accessible critical connections in Units 1, 2, and 3

Containment Buildings will be completed by April 20, 1984.

- o Revision to Project Quality Program Manual, Procedure 18.6, "Project Quality Assurance Surveillance," will be issued by February 28, 1984.

VIOLATION II.B.2

"2. Bechtel Specification 13-CM-307, 'Design, Installation, and Testing of Concrete Anchors,' established requirements for bolt embedment depth, spacing, torquing, and case-by-case Licensee approval for use.

"Contrary to these requirements, concrete expansion anchors were deficient in that 15 bolts were undertorqued, washers were missing under two nuts, three bolts were insufficiently spaced from other bolts or unused holes, three unused holes were ungrouted, and two cases existed where prior Licensee approval was required and not obtained. These anchors were located in various safety-related raceway supports, and are itemized in NRC Inspection Report No. 50-528/83-84, pages VII-8&9.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.B.2

(1). Admission or Denial of Alleged Violation:

The violation is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2) Reasons for the Violation:

Expansion anchors of various types are used on this Project only when all other viable alternatives are exhausted. Expansion anchors are categorized by Specification 13-CM-307 into four groups, "A" through "D", depending on their application and safety significance. Group "A "expansion anchors are used for safety-related pipe supports and hanger connections. Only Rock Bolt Expansion Anchors are used in Group "A". Group "B" includes all electrical cable tray supports and Category I HVAC duct supports. Approved Hilti, Ramset, or Drillco expansion anchors may be used for Group "B". Group "C" includes pipe supports and hanger connections for the fire-protection piping and for all other project classifications not included in Group A, B, or D. Approved Hilti, Ramset or Drillco expansion anchors are used for Group "C". Case-by-case approval by APS is required for expansion anchors used in Groups A, B, and C. Group "D" includes electrical raceway (except cable tray), aluminum sheathed cable, non-class IE systems, instrument tubing, sensing lines, local panels, communication systems, non-category I HVAC supports, and miscellaneous platform and stair systems where load

is transferred in shear only. Hilti, Ramset or Drillco expansion anchors may be used for Group "D". No case-by-case approval, testing or documentation is required since the criteria for the use of these anchors were pre-established. The expansion anchors for all groups are designed conservatively using large factors of safety and in accordance with I&E Bulletin 79-02. Further factors of safety are applied when vibratory or impact loadings may be present.

With respect to the 15 Hilti KWIK-bolt expansion anchors which were found by the NRC to be undertorqued, test data has shown that Hilti KWIK-bolt expansion anchors lose a significant amount of their initial torque, up to 30 percent in some cases. It was also shown that this loss does not significantly affect the anchor's load carrying capacity. The high factor of safety utilized in design ensures the proper functioning of the anchor. Subsequent to the NRC inspection, Bechtel QC reinspected, at random, an additional 226 concrete expansion anchors in various areas of the Auxiliary, Control and Containment Buildings. Of those, one bolt was found to be slightly undertorqued, but not loose, and one was stripped (turned in hole but would not pull out) such that

it could not be torqued. None of the other type of violations identified by the NRC were found during the reinspection effort. Prior to, and continuing after the NRC inspection, a systematic walkdown of electrical raceway supports has been in progress. The purpose of this walkdown is to ensure compliance with the design drawings and specifications. It encompasses Units 1, 2, and 3 and supplies as-built information for Bechtel Engineering review and disposition. Deficiencies such as those found by the NRC CAT inspection are routinely identified, documented and dispositioned by Bechtel Engineering. Most of these discrepancies are found to be acceptable and are dispositioned Use-As-Is and are documented on FCR's or as-built drawings. Those which are deemed unacceptable are corrected and documented by NCR's.

The deficiencies found by the NRC which are relative to concrete expansion anchors have been evaluated by Bechtel Engineering and it has been determined that none of the conditions would have adversely affected the safety of plant operations. Left undetected, none of the deficiencies would have caused failure of the systems they support. This is due, in part, to the high amount of re-

dundancy designed into each system. Based upon these considerations, none of the conditions identified are safety significant.

Based on the fact that the HPSI "A" room has undergone a significant amount of modification which is not typical of most of the plant, Bechtel Engineering feels that the number of deficiencies found is not representative of the overall quality of installation. To provide additional data concerning these installations, a reinspection in Units 1, 2, and 3 of expansion anchors will be performed and the results evaluated. Torque will be checked to 70 percent of the installation torque value. This inspection torque, based on the previously mentioned test results, is the torque which the in-situ anchors are expected to exhibit.

Failure to obtain APS' approval prior to installation of concrete anchors is attributed to oversight. All the responsible individuals involved in approving concrete anchor installations have reviewed this violation and applicable specifications.

(3). Corrective Steps Which Have Been Taken and Results Achieved:

The problems identified by the NRC concerning concrete anchors were either corrected on the spot,

as documented on NCR's WA-3396, EA-3400, and EA-3405 or were covered by FCR 62,238-C. These violations were all found in the HPSI "A" Room and in the Auxiliary Building wraparound section at Elevation 100'-0".

(4). Corrective Steps Which Will be Taken to Avoid Further Violation:

A procedural change to require 100 percent QC inspection for all accessible safety-related concrete expansion anchor installations is being processed. The original inspection sampling requirement was 10 percent; however, the implemented practice of inspection as verified by the reinspection program, has been approximately 90 percent.

Bechtel Engineering has revised Specification 13-CM-307 by issuing SCN 3570. This change improves the administrative process by which APS approval is obtained before concrete expansion anchors can be used. An additional SCN to Specification 13-CM-307 will be issued to reflect the QC procedural change mentioned above.

In accordance with the revised specification, Engineering must include a reference to the APS authorizing correspondence on any design document issued to Construction showing expansion anchors.

As part of the transfer process, as established by WPP/QCI 31.0 a punchlist is assembled of all work remaining in the area that must be completed prior to the area release. Grouting of unused holes is included on that punchlist.

The Field QA Surveillance Program will be upgraded to include a selective sampling of QC accepted installations on a monthly basis to continually assess effectiveness of the inspection program in vital areas of concrete expansion anchors.

(5). Date When Full Compliance Will be Achieved:

- The revisions to Specification 13-CM-307 and Construction procedure WPP/QCI 24.1 will be issued by February 28, 1984.
- The expanded evaluation of the installed concrete anchors will be completed and documented by April 1, 1984.
- Project Quality Program Manual will be revised to specifically establish a monthly program for an overview of previously accepted installations by QC by February 28, 1984.

VIOLATIONS II.B.3 and II.B.4

"3. Procedure WPP/QCI 201.1, Revision 18, dated May 25, 1983, 'Nuclear Pipe Hangers and Supports Installation,' Appendix I, requires the QC Engineer to verify each completed task on the 'CIP for Nuclear Pipe Supports.'

"The inspection requirement on the CIP for 'Task 1' is to verify that the support assembly is correct per approved engineering drawings and specifications.

"Contrary to the above, in September, 1983. Unit 1 pipe supports were found to be incorrectly installed per approved drawings and specifications but had been verified correct by the Piping QC Engineer. Specifically, supports SI-106-H003, H005, and H036; SI-101-H00A; and SI-106-H001 were found with items which did not meet drawing requirements as described in Inspection Report 50-528/83-84, pages V-3, 4, and 5. The supports had been accepted by Piping QC Engineers during the period between November 28, 1979, and November 20, 1981.

"This is a Severity Level IV Violation (Supplement II)."

"4. Procedure WPP/QCI 201.1, Revision 18, dated May 25, 1983, 'Nuclear Pipe Hangers and Supports Installation', Appendix I, requires the QC Engineer to verify each completed task on the 'CIP for Nuclear Pipe Supports'. The 'CIP' inspection requirements for Task 8 require the Welding QC Engineer to verify that field welding is complete. For Task 9, he is to check the vendor welding for size and length. Additional instructions to the Welding QC Engineer in Appendix I instruct him to verify welding acceptability.

"Contrary to the above, in Septe r 1983, Unit 1 pipe supports were found with unacceptable weld conditions

which had been reported as acceptable by the Welding QC Engineers. Specifically, pipe supports SI-100-H005, H015, and H034; SI-102-H00B, SI-106-H011 and SI-176-H001 and H003 were found with unacceptable weld conditions. The supports had been verified acceptable during the period July 14, 1980 to September 15, 1982. The welds and deficiencies are described in NRC Inspection Report No. 50-528/83-84, pages V-5, 6, and 7. "This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATIONS II.B.3 and II.B.4

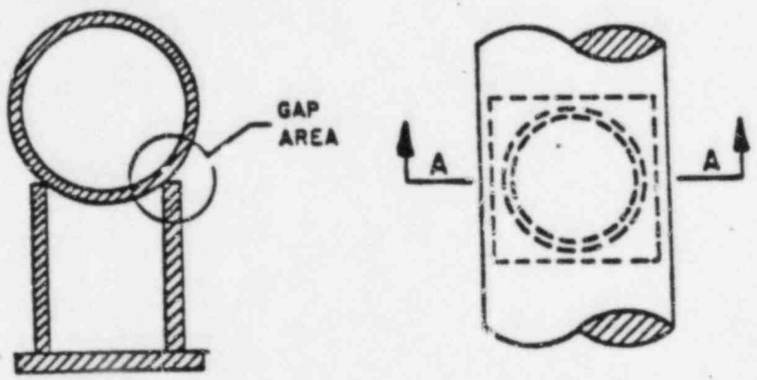
(1). Admission or Denial of Alleged Violation:

The violations are admitted but the severity level assigned to Item II.B.4 is inappropriate for the reasons stated herein, and in Attachment B, pages 6 and 7.

(2). Reasons for the Violations:

During the NRC inspection of the Safety Injection System, 12 pipe supports were found which did not meet the criteria of the design drawing and applicable tolerances allowed by Procedure WPP/QCI 201.1. The basic concern seems to involve the size and quality of welds which were performed by the craft and accepted by Quality Control In reviewing the violations, many of the problems are a result of unclear procedures for inspecting welds. Along circumferential areas of piping, problems

arise when a pipe stanchion or a pipe lug is prepared to fit up to a pipe (see Figure 1).



SECTION A-A PLAN

FIGURE 1

As shown in Section A-A of Figure 1, the normal fit-up of pipe spools and support stanchions leaves a gap between the inside and outside diameters of the stanchions. Although the design drawing specified the pipe spool to support stanchion attachment weld to be an all-around

fillet weld, this attachment weld was in many cases made by filling in the gap between the spool and the stanchion. This method of welding is structurally equivalent to the fillet weld specified on the design drawing.

Another common problem detected on welded piping attachments such as support stanchions, was the omission of the fillet weld cap on a full penetration weld required by the design drawing. Fillet weld caps are normally specified on all support stanchions with full penetration attachment welds to provide a smooth stress path transition between the pipe spool and the stanchion. Due to the size ratio between the pipe and the support stanchions used on this project, however, the majority of all stanchions do not actually require the fillet weld cap required by the design drawings to ensure the structural adequacy of the support.

Even though these cases do not cover all discrepencies found, they are an example of the types of occurrences observed. When designing miscellaneous steel structures certain criteria are used by Engineering which tend to establish a large factor of safety in the structure. To meet stiffness requirements, deflection allowables are established. By designing the structure to meet these

allowables, stresses in the members of the structure are kept significantly below the allowables established by code. For small bore piping, actual stresses tend to be not more than 20% of allowables while for large bore piping stresses are generally never more than 60% of allowables. In addition, weld sizes are usually governed by code minimums and not strength requirements.

(3). Corrective Steps Which Have Been Taken and Results Achieved:

Specific pipe support items identified by these violations have been corrected by the following NCR's.

Violation II.B.3:	PA-7141, PA-7149, PA-7151, and PA-7154
Violation II.B.4:	PA-7154, PA-7155, PA-7170, PA-7171, PA-7229, PA-7230, and PC-7238

Since a number of supports on safety-related systems were found to be "substandard" with regards to design requirements, the project elected to implement a major and comprehensive reinspection program. The following types and categories of supports and racks were included in this reinspection program:

a. All ASME Nuclear Class 1 pipe supports.

b. All ASME Nuclear Class 2 and 3 pipe supports included in the Condensate Transfer and Storage System, the Essential Chilled Water System, the Essential Cooling Water System, the HVAC -Containment Building, and the Containment Hydrogen Control System.

c. All pipe supports in the In-Service Inspection Program which includes the Auxiliary Feedwater System, the Chemical and Volume Control System, the Reactor Coolant System, the Main Steam System, and the Safety Injection and Shutdown Cooling System.

d. All other safety-related pipe supports inspected and accepted by Construction QC prior to June, 1980.

The reinspection program included 2199 pipe supports and pipe racks. All inspections of the program were completed on December 16, 1983. A total of 2,047 pipe supports and 104 pipe racks were reinspected. A total of 48 pipe supports were not accessible for reinspection. All nonconforming conditions noted during the reinspection program were documented on NCR's PX-7370 and PX-7313.

These NCR's identify a total of 1,269 nonconforming conditions on 807 different pipe supports or pipe rack assemblies.

The majority of nonconforming conditions were concerning welds. A total of 925 (72.9%) of all conditions reported addressed weld quality, weld size and weld length/location deficiencies. Weld quality includes the general quality of weld (example, weld splatter) and accounts for 93 (7.4%) of all deficiencies. Weld size is the evaluation of all welds either undersize, oversize or cases where the size of weld is unclear on the applicable design documents. This case accounts for 565 (44.5%) of all deficienceis. Weld length/location accounts for all incomplete welds, short welds, intermittent spacing incorrect, missing welds and incorrect locations of welds and accounts for 267 (21%) of all deficiencies. All weld deficiencies were evaluated as not having an adverse affect for the respective systems with the following justifications: (1) All linear indications which resulted in code violations were removed. (2) As stated previously, Bechtel Engineering has included enough conservatism to account for construction practices; and (3) Of all the undersize welds which violated the AISC, AWS or ASME Code

requirements, 87% were 1/16" undersize, 11% were 1/8" undersize, and the remaining 2% were noted as being 3/16" undersize. The welds which were 3/16" undersized were on obtuse angles where accurate measurements could not be made, or in low stress areas where the minimum AISC weld size was not required for strength. The design of the subject pipe support welds have been qualified as described in Bechtel's M&QS Report GRS-020-02, which is included with DER 80-3. The "as-built" calculations indicate that the designs are sufficient to carry the project design loads. Therefore, the installed and as-designed pipe supports are acceptable without repair. This condition is viewed as not reportable under the requirements and reportability criteria of 10 CFR 50.55(e), because if the condition had not been detected, it would not have constituted a significant safety hazard. While the majority of the problems involved weld deficiencies, the most severe problems involved deficiencies in pipe support configurations and in pipe support components. Pipe support configuration deficiences include fabrication problems, such as existing members larger or smaller than specified on the design drawing, and pipe support damage, such as members distorted or missing or

unauthorized disassembly of bolted connections. A total of 165 (13%) of all reported deficiences involved pipe support configuration problems. Pipe support component deficiencies include those aspects of component installation, such as trueness and correct installation per manufacturer's recommendation. A total of 135 (10.6%) of all reported deficiencies involved pipe support component problems.

The most severe deficiencies identified by the reinspection program include five supports which have undocumented disassembly after final Construction QC acceptance.

These include hangers 1EC013H00E, 1EC014H00M and 1EC061H00J which were found with the high strength bolts removed; hanger 1EC015H00E had a member completely removed; and hanger 1SI220H007 which had one of two snubbers disconnected at one end. These conditions represent an overall failure rate of 0.2 percent and are evaluated as safety significant.

The evaluation of the reported hanger configuration and component deficiencies also indicates that the adequacy of 41 pipe supports with problems in their categories have been rendered indeterminate. The various problems include: (1)

components skewed beyond manufacturers tolerance, (2) component pipe clamp bolt loose, (3) strut lock nut loose, (4) strut retainer ring missing, (5) cotter pins missing and (6) various jam nuts missing. In each of the above cases, the locking device used to keep the component from vibrating loose is missing. A missing locking device will not cause a failure of the support but could lead to component failure.

In connection with this reinspection program, Quality Assurance conducted an overview of the QC reinspection program on a random sample of 99 pipe supports to assess inspection effectiveness. This resulted in rejection of 7 pipe supports accepted by QC during this reinspection program for a 7 percent error rate. CAR S-83-56 was issued to QC to establish cause and obtain the necessary corrective measures to avoid recurrence. All deficiencies found as a result of this overview program were dispositioned as "Use-As-Is".

In summary, the reinspection program can basically be separated into one group of weld problems and another group of support configuration problems. Weld problems definitely encompass a larger number of supports. However, the problems are all acceptable as far as strength is concerned and did

not render the support incapable of its required function. Even though strict inspection criteria was not followed in accepting these welds, all supports have been accepted and are fully functional for the design conditions. Support configuration problems are not as numerous, but they do have a much greater severity level. Almost all configuration deficiencies show evidence of correct installation at one time, even though their present condition of disassembly was not documented.

(4) Corrective Steps Which Will be Taken to Avoid Further Violation:

The scope of the reinspection program was adequate to determine the types, severity, and frequency of deficiencies which can be expected throughout each of the units. This information indicates, that the remainder of Unit 1 safety-related pipe supports require reinspection to address the safety significant problems found during the reinspection program. No additional reinspection for weld size, length or quality is required based upon the evaluated acceptance rate in the reinspection program.

The revised procedure for control of work performed during startup coupled with the use of

Bechtel Construction procedures to cover disassembly and reassembly of supports during startup will preclude recurrence.

The following training sessions including specialized training by Bechtel's Material and Quality Services (M&QS) on inspection techniques have been conducted with QC and Field Engineering personnel:

- October 20, 1983 - Instruction of Pipe Support and Welding QCE's by Bechtel M&QS on proper use of fillet weld gauges and on visual weld inspection criteria.
- October 27, 1983 - Instruction of Pipe Support and Welding QCE's and Welding FE's by Bechtel M&QS on proper use of M&QS weld gage for skewed fillet welds.
- December 7, 1983 - Reinstruction of Pipe Support and Welding QCE's by PFQCE on weld reinspection acceptance criteria.
- December 14, 1983 - Reinstruction of Pipe Support and Welding QCE's by Lead Welding QCE on pipe support accept/reject criteria.

To improve and direct the Quality Assurance activity relative to the installation and QC acceptance of pipe supports and other key construction activities, the following Quality Assurance program improvements are being implemented:

a. A corrective Action Reverification Program is being established by Bechtel Jobsite QA. The purpose of this program is to reverify the effectiveness of previous corrective actions taken for selected quality problems which:

- o Were serious enough to have been reported to the NRC (DER's)
- o Have a history of recurrence (trends/audits/surveillance CAR's)
- o May be generic (Bechtel Power Divisions CIDS computer program).

Procedural guidelines are in the process of formulation to establish the selective methodology, establish frequency of reverification, and document results on appropriate forms.

b. The Field QA Surveillance Program will be upgraded to include a selective sampling of QC accepted installations on a monthly basis to continually assess effectiveness of the inspection program in vital areas of pipe supports.

(5) Date When Full Compliance Will be Achieved:

- o The physical work to resolve all nonconformances requiring rework was completed January 20, 1984.

- The revised final report for DER 83-74 will be issued by February 28, 1984.
- QA verification of corrective action taken by QC for Bechtel CAR S-83-56 will be completed by February 15, 1984.
- Project Quality Program Manual, Procedure 16.0 - Corrective Action - will be revised to include the corrective action reverification program and issued by February 28, 1984.
- Project Quality Program Manual, Procedure 18.6 - Project Quality Assurance Surveillance - will be revised to specifically establish a monthly program for an overview of previously accepted installations by QC. This revision will be issued by February 28, 1984.

VIOLATION II.B.5

"5. Specification 13-PM-204, Revision 12, dated April 17, 1983, paragraph 12.1.2, states the design and location of all pipe supports shall be the responsibility of project engineering. Paragraph 12.1.4 states pipe supports designed by engineering will be shown on drawings and all design details will be shown including miscellaneous steel.

"Contrary to the above, in September, 1983, Unit I pipe support SI-100-H012 contained a miscellaneous steel

member. The member was not shown on the pipe support drawing, 13-SI-100-H012, Revision I, and was used to provide support to an instrument air line.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.B.5

(1) Admission or Denial of the Alleged Violation:

The violation is admitted, but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2) Reason for Violation:

This condition is attributed to oversite by Bechtel Engineering.

(3) Corrective Steps Which Have Been Taken and Results Achieved:

The noted procedural deficiency is documented on APS Corrective Action Request C83-142N. The identified pipe support drawing has subsequently been revised.

Bechtel Engineering will review all Unit 1, 2 and 3 pipe support drawings for the existence of any non-documented attached supports. Normal design practice is to assure that multiple supports are clearly cross-referenced on the drawings. The attaching support and the support being attached to are shown in phantom with support numbers on their respective counterpart drawings. Similarly,

the design calculations of each support include the load effects from all supported piping. Loads from attaching supports are identified in the calculation with the support numbers indicated.

A review of this condition has determined that it is not safety significant.

(4) Corrective Steps Which Will be Taken to Avoid Further Violations:

Revised calculations, hanger drawings, design change package, and DER's which apply to Units 1, 2 and 3 will be prepared if necessary as a result of the investigation.

Bechtel Engineering has notified all responsible design personnel of the design document requirement.

(5) Date when Full Compliance will be Achieved:

The investigation by Bechtel Engineering will be completed by March 1, 1984.

VIOLATION II.B.6

"6. Procedure WPP/QCI No. 204.0, Revision 3, 'Piping Systems Release for Insulation', Appendix I requires that piping systems be checked for unacceptable surface damage prior to insulation of the piping.

"Contrary to the above, pipe spool 1SI-009 S002 was certified acceptable for insulation on November 14, 1982, with the unacceptable pit in the pipe which violated minimum wall requirements.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.B.6

(1). Admission or Denial of the Alleged Violation:

The violation is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2). Reasons for the Violation:

This violation was caused by an oversight by the QC Inspector. An unclear procedure contributed to the oversight.

(3). Corrective Steps Which Have Been Taken and Results Achived:

The identified condition and another condition identified by the NRC CAT Team were documented on NCR's SM-2976 and PA-7138. Both conditions were evaluated by Engineering as not violating minimum required wall requirements and were dispositioned "Use-As-Is". The depth of the indication did exceed the manufacturer's tolerance for minimum wall (12.5% of nominal). However, in the investigation of this condition, Engineering determined that the minimum wall thickness required by design (calculation ZZ-584) had not been violated. This, therefore, does not represent a safety significant condition.

The WPP/QCI 204.0 for surface inspection of piping prior to release for insulation was revised and

expanded for clarification. Specifically, the procedure was changed from a simple "accept" buy-off to separate buy-offs for surface damage, arc strikes, and cleanliness. The reference to ED-1 for visual acceptance criteria was deleted and the specific evaluation requirements were put into the procedure. When the visual criteria is indeterminate, a minimum wall evaluation is described that must be documented on the Construction Inspection Plan (CIP). If, after that evaluation, the surface indication is not acceptable, the procedure now requires that an NCR be prepared.

In order to determine the likelihood that some unacceptable surface indications could exist on piping insulated prior to the procedure changes, a review of approximately 550 "Q" class spools was made in Unit 1. This sample included spools that had been previously insulated but were currently "uninsulated" for some reason, and spools that had yet to be insulated. Although many spools were reported with minor blemishes, abrasions, or indications, all but five were acceptable to the visual criteria. The five indications were evaluated and found to be acceptable to the current criteria. No nonconforming indications were found.

The sample size approximately 550 represents 22 percent of the 2,532 "Q" spools requiring insulation. It has been concluded, therefore, that no detrimental surface irregularities exist on "Q" piping insulated prior to the procedure change.

(4). Corrective Steps Which Will be Taken to Avoid Further Violations:

To maintain high inspection standards for the work being performed in Units 2 and 3, formal training for piping field engineers, QC engineers, and subcontract engineers was conducted after the procedure was changed. Three PCN's have subsequently been issued against WPP/QCI 204.0.

The Field QA Surveillance Program will be upgraded to include a QA overview of piping systems released for insulation per WPP/QCI 204.0 on a continuous monthly basis, to assure correct disposition/resolution of surface damage and maintenance of cleanness, prior to application of insulation. WPP/QCI 204.0 is included in the approved Field QA Audit Schedule. This activitiy will specifically cover Unit 2 and 3 systems released for insulation.

(5). Date When Full Compliance Will be Achieved:

WPP/QCI 204.0 revisions and retraining of responsible personnel have been completed. Revision to

Project Quality Program Manual, Procedure 18.6 - Project Quality Assurance Surveillance - will be issued by February 28, 1984.

PART III

NOTICE OF VIOLATION II.C

"Appendix B of 10 CFR 50, Criterion IX, as implemented by Chapter 17 of the licensee's PSAR and FSAR, requires, in part, that: 'measures be established to assure that special processes including welding are controlled and accomplished in accordance with applicable codes, standards, specifications, criteria, and other special requirements.'

"FSAR Section 3.8.1.66 states: 'Welding is done in accordance with AWS D1.1-72, Revision 1, 1973, Structural Welding Code.' Bechtel Drawing 13-S-ZAS-536, Revision 3, requires a 5/16-inch fillet weld when attaching structural steel vertical members to horizontal members. Drawing 13-C-ZAS-570, Revision 8, requires a 5/16-inch fillet weld when attaching structural steel to embedded plates. Additionally AWS D1.1, Paragraph 10.17, states that undercut shall be no more than 0.01-inch deep when its direction is transverse to primary tensile stress in the part that is undercut, and not more than 1/32-inch deep for all other situations.

"Contrary to the above requirements, at the time of the inspection, the size of structural steel fillet welds was less than required by the drawings and undercut in welds exceeded the requirements of AWS D1.1. These

welds were located in various safety-related structural steel and are itemzed in NRC Inspection Report No. 50-5283-84, pages VII-4, 5, and 6.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.C.

(1) Admission or Denial of the Violation:

The violation is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

(2) Reasons for the Violation:

The engineering deviations to AWS D1.1-72, as included in the construction procedures and construction specification, had not yet been included in the applicable sections of the FSAR.

Field Engineering and Quality Control Inspection personnel did not identify or document minor deviations from weld specification requirements which had previously been accepted by project engineering on a nonconformance report without rework.

(3) Corrective Steps Which Have Been Taken and Results Achieved:

The noted violations concerning miscellaneous steel welding were documented on NCR CA-4320 for resolution. The findings from Bechtel's re-inspection program are documented on NCR's CA-4366 and CA-4415. NCR CA-4366 prompted the generation

of DER 83-72 to provide an evaluation for safety significance under the requirements of 10 CFR 50.55(e).

The structural and miscellaneous steel welding requirements as contained in Specification 13-CM-320 were revised for clarification and ease of interpretation by Field Change Requests (FCR) 72,146-C and 71,023-C, and Specification Change Notice (SCN) 3568. Areas specifically addressed were weld undersize, oversize, and undercut. The changes covered both welding requirements and inspection accept/reject criteria. An additional review was performed by Bechtel Engineers to assure that all deviations to AWS D1.1 meet the project design requirements. Responsible Field Welding Engineering and Welding QC personnel were trained not only on the specification changes but also retrained on weld inspection techniques and the use of weld inspection tools and implements.

(a) A training session on the use of skewed fillet weld gauges was conducted on October 27, 1983, with all Welding QC Inspectors and all Welding Field Engineers.

(b) Training sessions were conducted with Welding QC Inspectors on October 20, 1983, and December 7, 1983, to provide instruction on the

clarified criteria and to reinforce existing inspection criteria.

Reinspection of 348 additional structural welds was completed on November 7, 1983 and the evaluation of observed conditions is as follows:

Out of the 348 welds inspected, a total of twenty or approximately six percent were found to be undersized; eighteen welds were between 1/32" and 1/16" undersized while two were 1/8" undersized. This condition is not safety significant.

Oversize welds are of concern when they could result in lamellar tearing of the base metal. Particular concern is given to lamellar tearing when base materials greater than one inch in thickness are overwelded. The major purpose of limiting oversized welds on material less than one inch thick comes from economical and distortion considerations. The oversized welds identified here have been visually examined for excessive distortion and any indication of lamellar tearing. No cracking or unusual distortion was observed. The design margin used for this type of connection is generally about 30 percent. Only a few connections were designed up to the allowable loads.

All design loads for the reinspected weld conditions were approximately 80 percent of the allowable loads. As is expected for the majority of the cases, where design loads approximate allowable loads, margin still exists (e.g., approximately 15 percent which can be demonstrated by testing or dynamic analysis).

A review of the undersize structural steel welds identified by NCR's CA-4320, 4366, and 4415, comprising all the undersize welds identified by the NRC inspection plus those found by the Bechtel reinspection program, have been evaluated for safety significance. The review by Bechtel Engineering found that all identified weld sizing defects could be dispositioned "Use-As-Is" since, if left uncorrected, none of the defects would represent a safety significant condition.

Combining the very conservative design loading requirements, the conservative AISC minimum weld requirements, and results of the reinspection which resulted in all weld/defects being dispositioned "Use-As-Is", Bechtel Engineering concludes that the structural and miscellaneous steel welding already

completed in Units 1, 2, and 3 is adequate, and is not safety significant. Based on this evaluation, no additional reinspection of structural steel welds in Units 1, 2 and 3 is warranted.

(4) Corrective Steps Which Will be Taken to Avoid Further Violations:

The FSAR will be revised by SAR Change Notice 1123, which will incorporate the specific welding requirements currently contained in Specification 13-CM-320. The exceptions taken to AWS D1.1-72, Revision 1, 1973, and the justification for the exceptions will be incorporated into the FSAR. This change clarifies the licensing document to incorporate the flexibility permitted by the Code. The change also provides consistency between the implemented practice reflected in the construction specification, as allowed by the Code, and the licensing document.

A re-review by Bechtel Engineering to provide additional assurance of consistency between the licensing documents and the other currently implemented construction specifications is currently being completed and will be documented by the final report issued for Deficiency Evaluation Report 83-72.

The Field QA Surveillance Program will be upgraded to include a QA overview of structural steel welded connections accepted by QC. This selective sampling on a monthly basis will assure that on-going activities are in compliance with specifications and AWS D1.1 requirements. The WPP/QCI governing this activity will also be included in the approval Field QA Audit Schedule.

(5) Date When Full Compliance Will be Achieved:

- o A draft revision to FSAR Section 3.8.1.6.6 and 3A.10 will be submitted for NRC review by March 31, 1984, and incorporated into Amendment 13 to the FSAR.
- o Additional training of Welding QC and Field Engineering to reinforce inspection criteria will be conducted by January 31, 1984.
- o The final report for DFR 83-72 will be issued by March 15, 1984.
- o Revision to Project Quality Program Manual, Procedure 18.6 - Project Quality Assurance Surveillance - will be issued by February 28, 1984.

PART IV

NOTICE OF VIOLATION II.D

"10 CFR 50 Appendix B, Criterion XVI, states in part, that: 'Measures shall be established to assure that conditions adverse to quality such as failures . . . deficiencies . . . defective material and equipment, and nonconformances are promptly identified and corrected.' Borg Warner valve assembly drawing number 77770-1 requires that the stud nuts connecting the bonnet to the valve body be torqued to a value of 160-200 foot pounds.

"Contrary to the above, on September 15, 1983, the inspector observed torque verification performed on valve number V-470 which resulted in the identification of loose stud nuts connecting the bonnet to the valve body.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.D

1. Admission or Denial of the Alleged Violation:

   The violation is admitted but the severity level assigned is inappropriate for the reasons stated herein and in Attachment B, pages 6 and 7.

   Reason for the Violation

   As noted in the response to the violation noted in section I.A.2, SI-470 was incorrectly assembled because of incorrect supplied parts from a sup-

plier, although the asse[illegible]ontrolled and documented. However, sul[illegible], the installation, the valve was part[illegible]assembled and improperly assembled.

2. Corrective Steps Which Have Been Taken and the Results Achieved:

Valve SI V470 has been repaired as documented by SFR 1SI-292.

3. Corrective Steps Which Will be Taken to Avoid Further Violations:

To preclude recurrence on Units 2 and 3 and to provide a documented inspection on future valve installations, Construction will revise WPP/QCI 202.0 to require verification that all vendor bolts, studs, and nuts are intact at the time the installation CIP is completed. The responsible personnel will be trained regarding the additional procedure requirement.

To assure work performed under the jurisdiction of APS is properly controlled, work performed on any permanent plant equipment will be performed under an approved Work Control program. This ensures that any changes to, or deviations from the plant design configuration, either temporary or permanent, are approved and documented prior to beginning the work activities. Performance of work or test activities on any permanent equipment within

APS' jurisdictional control must be concurred with by the Operations Shift Supervisor. The operations phase Work Control Procedure will be similarly expanded to assure prompt identification of discrepancies, local identification tagging or previous identified significant problems, and tracking of tags until resolution. The above requirements will ensure that the plant design configuration and system status are maintained in a known, approved state.

APS will expand the Startup Work Authorization (SWA) procedure s ch that when a discrepancy is observed on equipment in the startup jurisdiction, a SWA or SFR will be initiated. A copy of the SWA will be forwarded to the Shift Supervisor for his information and to determine if a tag should be hung to identify the problem locally. All tags will be tracked and controlled by Operations personnel, with a copy of closed SWA's also forwarded to the Shift Supervisor to allow timely removal of tags.

Before acceptance of a system or subsystem by PVNGS Nuclear Operations, a PVNGS Nuclear Operations Acceptance Walkdown will be conducted on the system to confirm that the system configuration is in accordance with design. APS management will

issue a directive to all APS Startup and Operations personnel informing them of their responsibility to identify, pursue and assure resolution of all discrepancies identified. Personnel will also be instructed not to perform work without the proper authorization and controls.

4. The Date When Full Compliance Will Be Achieved:

4.1 Construction procedures will be revised and personnel trained by February 28, 1984.

4.2 Startup procedures will be revised and personnel trained by March 1, 1984.

PART V

NOTICE OF VIOLATION II.E

"Appendix B, of 10 CFR 50, Criterion II, as implemented by Chapter 17 of the licensee's PSAR and FSAR, requires, in part, that: 'The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.'

"Contrary to the above requirement, pipe support SI-89-H008 was found during the September, 1983, inspection with rubber seal material in between the Flourogold slide plates, Item 54 and 55 on the drafing. The applicable support drawing does not permit the use of rubber material. The rubber material may impair the sliding function. The support had been accepted by QC on November 29, 1979.

"This is a Severity Level IV Violation (Supplement II)."

RESPONSE TO VIOLATION II.E

1. Admission or Denial of Violation:

   The violation is admitted but the severity level assigned is inappropriate for the reasons stated below and in Attachment B, pages 6 and 7.

2. Reasons for the Violation:

   The investigation of this violation revealed that the sealant subcontractor had spilled sealant ma-

terial some time earlier in the area. The cleanup effort did not include an inspection for possible effect on equipment in the immediate area, and some material remained between the sliding plates until found by the NRC.

3. Corrective Steps Which Have Been Taken and the Results Achieved:

During reinspection of approximately 2,100 safety-related pipe supports, detailed in the response to Violations II.B.3 and II.B.4, all observed deficiencies were documented, including sealant material on or in the supports. As a result, two additional supports were found with sealant material between the pipe and the restraint.

The conditions found by the NRC and during Construction's reinspection effort are documented on NCR PA-7169 and NCR PX-7370, Items 300 and 364, and dispositioned "rework."

This condition has been evaluated for safety significance. It was determined by Bechtel Engineering that the presence of the sealant material would not have impaired the function of the support. The sample size representing approximate 19 percent of all "safety-related" supports, the relatively few incidents found, and the evaluation that there is no safety-related problem, indicate

that no additional reinspections are warranted for sealant material on supports.

4. Corrective Steps That Have Been Taken to Avoid Further Noncompliance:

To preclude recurrence on all Units, Subcontract Notices have been sent to both penetration sealing subcontractors directing them to notify the Bechtel Subcontract Coordinator of any spillage. Upon such notification, the immediate area of the spillage will be inspected by Bechtel to assure proper cleanup has been achieved

Both sealing Subcontractors have acknowledged the SCN's in writing, stating that their personnel had been trained in the new requirement that spills be reported to the Bechtel Subcontract Coordinator in the future.

5. Date When Full Compliance Will Be Achieved:

Full compliance has been achieved.

ATTACHMENT E

APS SEPARATE ANSWER, FILED PURSUANT TO 10 CFR 2.205, PROTESTING THE ASSESSMENT OF THE CIVIL PENALTY PROPOSED BY SECTION 1.A. OF THE VIOLATION.

SEPARATE ANSWER OF APS FILED PURSUANT TO 10 CFR 2.205 TO SECTION I.A. OF THE NOTICE OF VIOLATION

1. Pursuant to 10 CFR 2.205 and the Notice of Violation, APS denies the violation alleged in Section I.A. of the Notice and protests the imposition of a civil penalty therefor. As grounds for such denial and protest, APS states as follows:

1.1 The allegation in Section I.A. of the Notice that APS violated Criterion II of Appendix B, 10 CFR Part 58 is based solely upon the four "examples" cited in such section, to-wit:

1.1.1 The installation of caps on the containment pressure sensing lines without the documentation required by established QA procedures and in the absence of any administrative requirement which would assure removal of the caps prior to operations.

1.1.2 The absence of any documentation recording the disassembled, nonconforming condition of the manual operator of valve SI V470 on HPSI "A" pump.

1.1.3 The absence of any documentation recording the nonconforming condition of the position indicator for valve SI V402 on HPSI "B" pump.

1.1.4 The absence of bolts from the base frames of such MCC's necessary to ensure the structural integrity of six motor control centers (MCC's).

1.2 Two of the four examples cited did not constitute a violation of Criterion II of Appendix B to 10

CFR Part 50 or any other Regulatory Requirements[1] as demonstrated by Attachment C.[2]

1.2.1 The installation of caps on the containment pressure sensing lines (the first example) was not a violation for the reasons stated in Sections 1 and 2 of Part I of Attachment C, pages 2-5.

1.2.2 No bolts necessary to ensure the structural integrity of six MCC's (the fourth example) were missing as demonstrated by Sections 1-3 of Part IV of Attachment C, pages 23-27.

1.3 With respect to the second and third examples cited in Section I.A., APS denies that the undocumented, nonconforming condition constituted a Severity Level III violation, because the existence of the condition, if left uncorrected, would not have prevented the HPSI system from operating in accordance with its design intent and, therefore, was not significant to safety.

It is questionable in the absence of safety significance whether the discrepant condition meets the test of a Severity Level V violation, i.e. "minor safety concern." It clearly does not meet the test of a Severity Level IV violation,

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[1] The term "Regulatory Requirements" as used in this document has the same meaning as that given to the term by footnote 2 in Appendix C to 10 CFR Part 2.

[2] References in this document to Attachments A, B and C mean those attachments to the letter, dated January 30, 1983, from APS to the Director, Office of Inspection and Enforcement, submitted in answer to the Notice of Violation.

since it is explicit in Appendix C of 10 CFR Part 20 that Severity Level IV applies only to a condition "of more than minor concern; i.e., if left uncorrected, they could lead to a more serious concern." (10 CFR 2. App. C, Section III).

Severity Level III applies only to "significant violations involving a deficiency in a licensee quality assurance program for construction related to a single work activity (e.g., structural, piping, electrical or foundations) . . . and normally involves multiple examples . . ." (10 CFR 2, App. C., Supp. II, para. C.1.). (Emphasis supplied).

Section I.A. of the Notice does cite four examples, but it is clear that the second example is a work activity that is not any way related to example no. 1 (instrumentation) or example no. 4 (electrical). It is also distinguishable from example no. 3 (which APS denies is a violation), because example no. 3 did not involve a failure to follow work procedures during preoperational testing.

1.4 For foregoing reasons, APS denies that Section I.A. alleges a Severity Level III violation and protests the assessment of the civil penalty as proposed.

2. In the alternative, if the foregoing protest of the imposition of a civil penalty for the violation alleged in Section I.A. of the Notice is disallowed, in whole or in part, APS requests the remission or mitigation of the civil penalty proposed by the Notice. In support of such request and addressing the five factors discussed in Section IV.B. of Appendix C to 10 CFR Part 2, APS submits the following:

2.1 APS acknowledges that (i) the discrepant conditions identified in the four examples cited in Section I.A. did exist in September, 1983, (ii) there was no documentation or record of such discrepant conditions, and (iii) such conditions were identified by the CAT. Nonetheless, consideration of these acknowledged facts must be tempered by the following considerations:

2.1.1 The subsystems and equipment referred to in first, second and third examples had not been accepted by PVNGS Nuclear Operations. (See Section 1 of Parts I, II and III of Attachment C, pp. 3, 9, and 17, respectively.)

2.1.2 The transfer of such subsystems and equipment by Bechtel construction to the APS Startup organization did not mark the completion of construction under the PVNGS startup program. (See PVNGS FSAR, Section 14.2.1, pp. 14.2-1 and 14.2.2 and Attachment B, pp. 1-5.)

2.1.3 The subsystems and equipment referred to in the first, second and third examples were undergoing Preoperational Testing in September, 1983. (See Section 1 of

Parts I, II and III of Attachment C, pp. 2, 9, and 17, respectively.)

2.1.4 The existence of conditions which do not conform to conditions required for operation is inherent in any incompleted construction.

2.1.5 Under the foregoing circumstances, the imposition of a civil penalty for a lack of documentation or a failure of APS to detect the discrepant condition can be based only upon an assumption that documentation and correction would not have resulted from the completion of Preoperational Testing then in progress or from inspections preceding acceptance by PVNGS Nuclear Operations of the discrepant conditions.

2.1.6 It is unfair and unreasonable to impose a civil penalty upon an assumption that a violation of a Regulatory Requirement will occur in the future.

2.1.7 Each of the discrepant conditions cited in the second, third and fourth examples has been analyzed to be not significant to safety. The significance to safety of the first example rests solely on an unreasonable assumption of a future failure to meet Regulatory Requirements. Consequently, the conditions cited in the examples do not meet the criteria established by Appendix C to 2 CFR Part 2 for assignment of Severity Level III.

2.1.8 The assignment of Severity Level III to violations cited in the four examples is not warranted under the circumstances where

(i) None of the examples are significant to safety;

(ii) There are no multiple examples related to a single activity (see section 2.6 hereof at page 10); and

(iii) The deficiency is a lack of documentation of the status or condi-

tion of subsystems or equipment still in Preoperation Testing.

2.1.9 The severity level assigned to the lack of documentation respecting the status of subsystems and equipment still undergoing Preoperational Testing should not exceed Severity Level V, or Severity Level IV at the most, if such deficiency is considered "symptomatic of program deficiencies, rather than isolated concerns." (10 CFR Part 2, Appendix C, Section IV, B).

2.2 Prior to the CAT Inspection, APS had (i) identified the concerns identified in the Enforcement Letter and expressed by the CAT inspectors and the Regional Administrator during the Exit Meeting and the Enforcement Conference, (ii) had initiated corrective action, and (iii) had initiated steps to determine reportability under 10 CFR §50.55(e). (See Attachment A.)

2.3 On its own initiative, APS has promptly taken comprehensive measures (i) to improve the PVNGS Startup program, (ii) to assure proper implementation of its quality assurance program, including, among other things, proper documentation, and (iii) to assure that work, inspections and tests previously performed during the Startup program were accomplished satisfactorily. (See Attachment 2-3)

2.3.1 With respect to the timeliness and scope of the measures taken by APS to address the concerns raised by the CAT Inspec-

tion, Attachment A addressed such matters more fully and is incorporated herein by reference. In summary, however, the record shows corrective measures were initiated by APS prior to the completion of the CAT Inspection. The scope and intensity of such measures was subsequently increased with the direct involvement and guidance of APS senior management.[3/]

Thus, in addition to the internal audit initiated by the Vice President, Nuclear Operations, immediately following the Exit Meeting on September 30, 1983 (see Attachment A, pp. 6-7), APS senior management commissioned an independent assessment conducted by a team consisting for the most part of members with no direct responsibility for PVNGS and headed by a qualified individual from another utility. This independent assessment was instituted promptly after the CAT Exit Meeting and before the CAT Inspection Report was issued. (See Attachment A, pp. 7-8).

On November 23, 1983, after completion and review of the internal audit, start-up work was suspended, on the sole initiative of APS, until a satisfactory work control program could be developed and implemented. (See Attachment A, p. 8).

On January 5, 1984, shortly after completion and review of the independent audit, the management structure for Palo Verde was reorganized. (See Attachment A, p.10).

3/ "APS senior management" means those officers of APS who are also members of its Board of Directors, currently the Chairman of the Board of Directors and Chief Executive Officer, the President and Chief Operating Officer, the Executive Vice President, Arizona Nuclear Power Project, and the Executive Vice President, Finance.

All of these actions, as well as others cited in Attachment A, demonstrate not only timeliness, but of equal importance, the dedication of APS management to complete Palo Verde in a manner which will prevent recurrence of the problems which have been identified.

2.3.2 With respect to improvements in the Startup program, APS has instituted a structural reorganization which (i) unifies under one officer the responsibility and authority for engineering, construction, startup, operation and maintenance of PVNGS, (ii) establishes improved means for controlling the interfaces between separate organizations within APS and between such organizations and outside organizations such as Bechtel and Combustion Engineering, and (iii) clearly defines and limits the role and responsibility of the PVNGS Startup organization to Prerequisite and Phase I Preoperational Testing and relieves it of responsibility for functions for which it has neither authority nor resources (e.g., engineering, construction, procurement, maintenance). (See Attachment A, p. 10).

2.3.3 Both APS and Bechtel have instituted reviews and reinspection programs which reach far beyond the limited scope of the subsystems and areas inspected by the CAT. (See Attachment A, pp. 6-8, 13-14, 17-25).

2.3.4 Renewed efforts have been instituted for training and indoctrination of project personnel to the high standards of safety and quality established for PVNGS with meticulous attention to detail. (See Attachment A, pp. 4, 12, 19-20, 23).

2.4 The enforcement history at PVNGS is demonstrably excellent. There has been no failure to implement previous corrective action committed to because of prior similar problems.

2.5 There is no evidence that APS management had prior notice of the specific non-conforming conditions cited as examples in Section I.A. of the Notice as a result of a licensee audit or a specific NRC or industry notification. There is evidence of APS management's awareness of problems in the PVNGS Startup program and of its efforts to evaluate and resolve them; and some remedial steps had been taken prior to the end of the CAT Inspection. (See Attachment A, pp. 2-3).

2.6 The factor of multiple occurrences referred to in Section IV B. of 10 CFR Part 2, Appendix C is not applicable to Section I.A. of the Notice, because each of the examples cited is distinguishable from the others.

2.6.1 The first example (capped containment pressure sensing lines) is an undocumented condition in an instrumentation system that existed during Preoperational Testing. The condition would have been nonconforming during operation. It was not the result of an unauthorized work activity; on the contrary, it was a prudent action which was consistent with established practice implemented during construction and Preoperational Testing. The only missing element was the lack of documentation which was not required.

2.6.2 The second example (the disassembled and improperly reassembled remote actuator on valve SI 470) resulted from an unauthorized work activity during Preoperational Testing in violation of established work procedures.

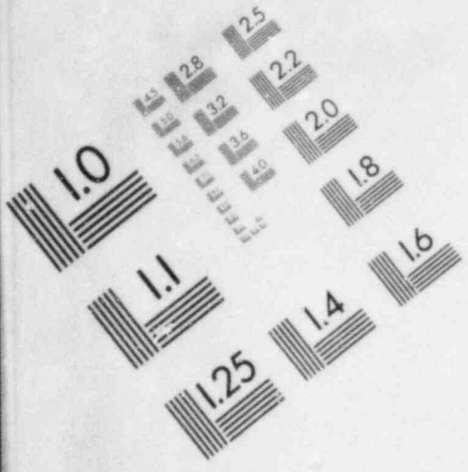
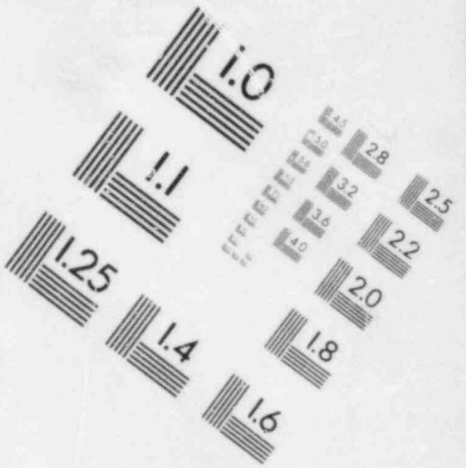
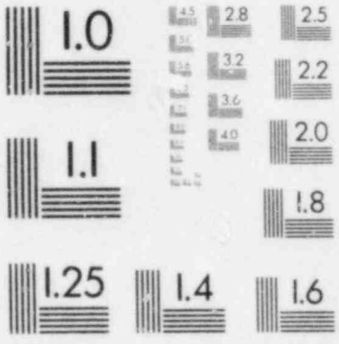
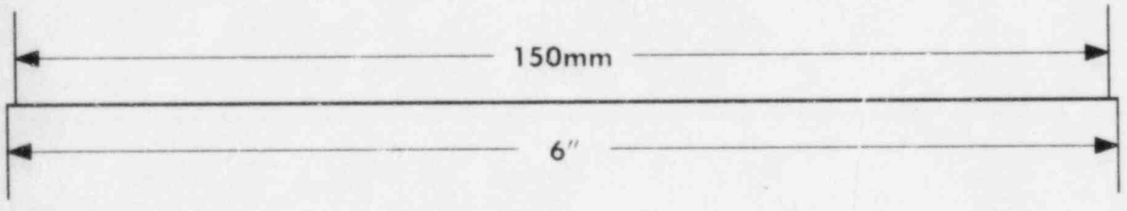
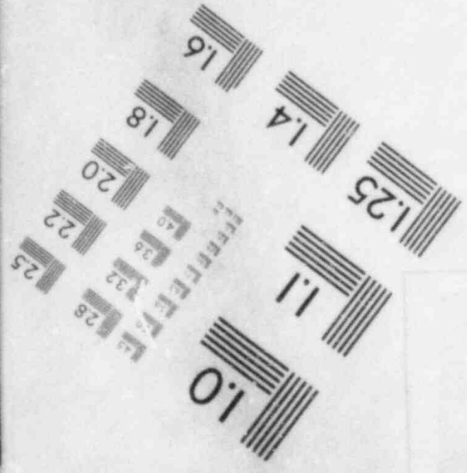


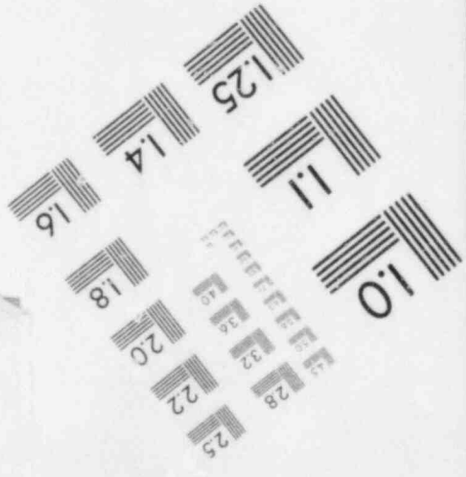
IMAGE EVALUATION TEST TARGET (MT-3)











2.6.3 The third example (valve SI V402 with a position indicator that prevented full open valve operation) was a condition existing in a piping system during Pre-operational Testing.

2.6.4 The fourth example (bolting of MCC's) was a condition in the electrical system which resulted from a construction activity. This construction activity did not violate any drawing or specification. The condition was not nonconforming because it did not affect the structural integrity of the component involved.

3. Finally, APS requests assignment of the severity level of the deficiencies noted in Section I.A. be reduced to Severity Level IV or V, and the concomitant remission of the civil penalty, because at least three of the four examples cited in Section I.A. have been analyzed to have no safety significance even if left uncorrected. Consequently, none of these, singly or collectively, meet the criteria established for assignment of Severity Level III by Appendix C to 10 CFR Part 2.

With respect to the first example cited in Section I.A., it can only be treated as significant to safety if it is assumed that future inspections and future implementation of Regulatory Requirements will be ineffective in detecting and correcting the capped conditions of the containment pressure sensing line. It is improper to assign safety significance to the capped condition solely on the basis of such assumption. It is equally improper to assign Severity Level III to the

lack of documentation covering the capped condition and to assess a civil penalty for the absence of such documentation.

Further, collectively, the four examples do not fall within the category of "multiple occurrences" as defined in paragraph C., Supplement II of Appendix C, 10 CFR Part 2 as set forth in Section 1.3 of this Attachment, pages 3, 4.

ATTACHMENT F

ALLEGED IMPROPER COMPLETION OF ONE OR MORE ELECTRICAL TERMINATION CARDS

ALLEGED IMPROPER COMPLETION OF

ONE OR MORE ELECTRICAL TERMINATION CARDS

Section I.B. of the Notice of Violation alleges that a violation of Criteria V and XVII of Appendix B to 10 CFR Part 50 resulted from the improper completion of one electrical termination card and possibly 50 to 100 additional cards. The alleged improprieties in the completion of such card (or cards) were (i) the signature of an electrician indicating that he had made the electrical termination described on the card when, in fact, he had not done so, and (ii) the identification of a crimping tool by serial number as having been used to make the termination crimp when, in fact, a different crimping tool had actually been used.

This matter was not the subject of the CAT Inspection, but arose from an allegation made by an individual who then was or previously had been employed at Palo Verde. The the allegation, which was made to two Region V investigators and one Region V inspector on June 2, 1982, and some of the results and conclusions of the ensuing investigation are included in the Report of the Special NRC Inspection issued April 22, 1983.

Such report covers the period of the special inspection and investigations of several allegations conducted

from June 1, 1982, through March 11, 1983. The report, while disclosing the allegation respecting termination cards, did not disclose the name of the alleger nor the names of employees interviewed in the course of the special inspection.[1/] No further disclosures of the special inspection and investigations have been made to APS. We have been informed that the NRC Office of Investigation has also made a report of its investigation, and has referred the matter to the Department of Justice for review. The Regional Administrator was unable to discuss the report of the Office of Investigation at the Enforcement Conference, because it was under review by the U.S. Department of Justice.

Following receipt of the April 22, 1983, Inspection Report, APS conducted a limited review of the matter. This review of the matter was limited, because, on advice of counsel, it was deemed that any attempt to contact and interview employees who might be the subject of the investigation could be construed as interference in a federal investigation.

On the basis of the limited review (principally a review of the April 22, 1983, Inspection Report and a record

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1/ The alleger disclosed his identity at a news conference in Phoenix on July 14, 1983. The report referred to some of the employees interviewed as: "A", "B", "C", "D", "E", "F", "G", "H" and "J".

check), it appears to the best of APS' information and belief that the matter arose as a result of the need to replace certain electrical termination cards which had been lost and the absence of any procedure governing the replacement of such lost cards. This deficiency in procedures was corrected by revision of Work Plan Procedure/Quality Control Inspection Instruction (WPP/QCI) 255.0 on July 12, 1982. The follcwing explanation of this procedure will assist in the understanding of this problem.

WPP/QCI 255.0 requires the craftsman performing a termination to complete the front side of a termination card where the termination is identified by (i) recording the date when the termination is made and the serial number of the crimping tool used and (ii) signing the card. The date, serial number and the craftsman's signature is not required and is not used to establish the quality of any termination. Indeed, under Appendix B to 10 CFR Part 50 quality control inspections of any work may not be conducted by any persons performing or responsible for the work. Thus, the signature of the craftsman and the crimping tool serial number are not and cannot be used or relied upon under NRC regulations to establish the acceptability of a termination.

The acceptability of a termination is determined and verified by visual inspections performed first by a Termination Engineer and subsequently and independently by a Quality Control Engineer. Each of these individuals is

required by WPP/QCI 255.0 to inspect each termination, and, if the termination is found to be acceptable, to record such fact by initialing, signing, and/or stamping appropriate spaces on the back of the termination card. These inspections are conducted in accordance with specifications set forth in 13-EM-306, and the acceptance criteria used are those established by Amp Special Industries for ring tongue terminals which are acceptable for use in nuclear power plants.

The crimp tool serial number and date recorded on the front of termination cards provides a means for identifying specific crimps accomplished during certain time periods. By utilizing this number and dates a total listing of all terminations made by a specific tool during a given time period may be obtained from the computerized data base developed from the information on the front of the termination cards. The capability to obtain such a listing is not required or useful for quality control purposes. It can be useful, however, if or when a crimping tool is found to be out of calibration, to identify the terminations made by that tool in the period between calibrations which will have to be reinspected.

The termination identified in the Notice of Violation, has been inspected and was found to be acceptable. The quality control inspection was documented in accordance with WPP/QCI 255.0. To the best of our knowledge, there has

been no substantiated allegation that either a Termination Engineer or a Quality Control Engineer has improperly stamped, initialed or signed any termination card. (See April 22, 1983, Inspection Report.) Further, as the April 22, 1983, Inspection Report shows, each of the terminations for which a replacement card was prepared was inspected by a Quality Control Engineer after the craftsman had signed the replacement card.

It is apparent from the April 22, 1983, Inspection Report that there was no intent on the part of any craftsman or his foreman or other supervisor to violate any NRC regulation since his signature and crimp tool serial number are not required by any such regulation. Nor could there be any intent to violate the required quality control inspection, because he did not and could not perform that function. The most adverse effect that could have flowed from an improper signature and the improper recording of a crimp tool serial number would be the need to recheck an excessive number of terminations if there was evidence that during the period when the termination was actually performed, crimping tools which were out of calibration were in use.

Investigation of the calibration records for crimping tools used at Palo Verde has not revealed any case where any crimping tool was out of calibration by a margin wide enough to affect the acceptability of crimps made with the tool. In fact, tests conducted to determine the effec-

tiveness of the crimping tools has shown that none of the total of 27 crimping tools which have been rejected for project use were damaged or out of calibration severely enough to produce an unsatisfactory termination.

Accordingly, in the absence of any information to the contrary as may be contained in the report of the Office of Investigation (which has not been disclosed), APS is of the opinion and belief that there is no evidence that any termination card was improperly completed by any craftsman, either on his own initiative or as a result of any direction of his foreman or other supervisor, with the intent to violate, defect or circumvent any Regulatory Requirement.

APS has also found no evidence, nor has any evidence been made available, to indicate that any inspection record completed by a quality control inspection was not completed in accordance with Regulatory Requirements. Additionally, APS has found no evidence, nor has any evidence been made available, that there are any terminations at PVNGS which are defective as a result of the alleged violation in Section I.B. of the Notice.