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

REGION V

Report No. 50-397/80-08

Docket No. 50-397 License No. CPPR-93

Licensee: Washington Public Power Supply System

P. O. Box 968

Richland, Washington 99352

Facility Name: Washington Nuclear Project No. 2 (WNP-2)

Investigation at: WNP-2 Site, Benton County, Washington

Investigation conducted: June 3 - July 25, 1980

Inspectors:

R. T. Dodds, Section Chief — Date Signed 8/15/80

T. W. Bishop, Reactor Inspector — Date Signed 8/15/80

A. D. Toth, Reactor Inspector — Date Signed 8/15/80

D. F. Kirsch, Reactor Inspector — Date Signed 8/15/80

P. P. Narbut, Reactor Inspector — Date Signed 8/15/80

G. Hernandez, Reactor Inspector — Date Signed 8/15/80

W. J. Wagner, Reactor Inspector — Date Signed 8/15/80

O. C. Shackleton, Investigator — Date Signed 8/15/80

P. J. Joukoff, Investigator — Date Signed 8/15/80

Approved by:

R. T. Dodds, Chief, Engineering Section
Reactor Construction and Engineering Branch — Date Signed 8/15/80

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Summary:

Investigation conducted between June 1 - July 25, 1980
Report No. 50-397/80-08

Areas Investigated: Nonroutine, unannounced investigation by regional based inspectors and investigators of allegations generally related to: material traceability discrepancies, quality record irregularities; and discrepancies related to corrective action specification and implementation. The investigation included examination of quality implementing procedures, observations of completed work, review of quality related documentation, and to a determination of the validity of allegations. The investigation involved 782 on-site inspector hours of one supervisor, two investigators and six inspectors.

Results: Of the nine generic areas investigated and inspected, 13 items of noncompliance and 6 unresolved items were identified.

1. Infraction Failure to maintain organization freedom of the quality assurance function from cost and schedule, paragraph 3.a.

2. Deficiency - Failure to maintain a survey document of a vendor, paragraph 3.b(1).

3. Deficiency - Failure to document inspection findings relative to incorrect amperage settings for MT probes, paragraph 4.b.

4. Infraction - Failure to maintain records for temporary weld attachments, paragraph 4.c(1).

5. Infraction - Piping support clearances in excess of requirements, paragraph 5.a(1)(a) & (b).

6. Infraction - Failure to use filler metal specified in procedure, paragraph 5.e.

7. Deficiency - Incorrect acceptance standards used to evaluate results of liquid penetrant examinations, paragraph 6.b(3).

8. Infraction - Failure to comply with procedure revision requirements, paragraph 7.a.

9. Infraction - Calculations were not provided to support deletion or redesign of support welds, paragraphs 8.a, b, and c.

10. Deficiency - Failure to provide a procedure and/or checklist for document review of work packages, paragraphs 11.a and 11.k(6).

11. Deficiency - Failure of QA Manager to review records of rework performed after document package acceptance review, paragraph 11.a.

12. Infraction - Failure to perform weld inspection as required by procedure, paragraph 11.a.

13. Unresolved - Specification of acceptance criteria for hanger components purchased to commercial standards, paragraph 3.c.

14. Unresolved - Welds were being cut out rather than repaired to preclude B/R review after two attempts to repair failed, paragraph 3.g.

15. Unresolved - Control and documentation of arc strikes on structural steel may be questionable, paragraph 5.c.

16. Unresolved - Dispositioning of questionable filler metal and corrective action to preclude reoccurence, paragraph 3.b(1)(b).

17. Unresolved - Difference between stores requisition records and laydown inventory records, paragraph 7.h.

18. Unresolved - Torque wrenches used for tightening of bolts for Velan valves in pump house may not have been calibrated, paragraph 10.c.

19. Unresolved - Question exists relative to the satisfactory removal of a ladder that had been tack welded inside a main steam pipe, paragraph 10.g.

DETAILS

1. Persons Contacted

(Washington Public Power Supply System)

*W. C. Bibb, Project Manager
*R. Johnson, Project QA Manager
*R. M. Foley, Deputy Project Manager - Engineering
J. Zimmerschied, Lead QA Engineer
*R. Tanner, Project Construction Manager
D. Burns, Chief Metallurgist
D. Renberger, Asst. Director, Technology
*G. T. Harper, Technical Support Manager
*M. Witherspoon, Division Manager - Quality Assurance
*A. Sastry, Owner's Quality Assurance Manager

Burns & Roe (B/R)

*R. C. Root, Assistant Project Manager
*H. R. Tuthill, Assistant QA Manager
L. Akers, Sr. Welding Engineering Supervisor
M. Badgett, Lead QA Engineer
R. D. Carmichael, QA Engineer
R. Powe, Lead QA Engineer - Audits
R. Spence, Lead QA Engineer - Documentation
M. Gianni, Lead Civil Engineer
*M. Parise, Special Projects Manager

WSH/BOECON/GERI (WBG)

P. Sly, QA Manager
L. Buckner, QC Manager
P. Webster, Records/QA Engineering Supervisor
C. Fox, Document Coordinator
S. Baker, Document Review Supervisor
K. Tompkins, Document Review Supervisor
D. Hartsoch, Field Material Coordinator
A. Duning, Lead Mechanical Contract Administrator
L. Norris, NDE Level III
J. Watkins, Receiving Supervisor
W. Morris, Engineering Manager
E. Bradburn, Chief Welding Engineer
M. O. Houck, Chief Field Engineer
G. K. Frazier, QA Support Supervisor

Hartford Steam Boiler Insurance Co.

R. Orth, Authorized Nuclear Inspector
W. Comegys, Authorized Nuclear Inspector

General Electric

K. Grayson, Inspector

During the investigation, 21 persons from Quality Control (QC) functions, 7 engineers involved in piping and hanger installation, 4 persons in related line assignments and 2 QA/QC managers were interviewed under oath and gave sworn testimony. Discussions were also held with project/construction management. Other persons contacted during the investigation included construction craftsmen, inspectors and supervisory/middle management personnel.

*Denotes persons present at management interview on July 24, 1980.

2. Background of Investigation of Allegations Related to Work by WSH/BOECON/BOVEE & CRAIL/GERI (WBG), Contract 215 (Structural Steel, Piping and Supports)

The NRC was contacted by another agency of the government who provided information relative to alleged violations of required construction/QA/QC practices for nuclear power plants at the WNP-2 site with respect to the 215 contractor's work (WBG). A total of 38 allegations/concerns were identified as a result of the initial discussions and interviews with the allegers and the contractor's personnel on June 1-4, 1980. The allegations/concerns having safety-related significance were investigated and some were substantiated as indicated in the following sections of the report. To be considered substantiated, a finding must be true, in violation of regulatory requirements, and must not have been identified as being properly handled by the licensee's QA program. Also, additional items of safety significance were identified and investigated by the inspection team.

3. QA/QC Program Administration

a. Concern: Independence of QA/QC personnel from construction management.

Finding: The inspector conducted an examination of the WBG QA Manager's interoffice memo file. On November 15, 1979, the QC Supervisor issued a memo (No. LGB-229) to the QA Manager and all QC Supervisors regarding the Swing Shift Construction

General Superintendent's Authority and directed compliance with the statement, "The Swing Shift Construction General Superintendent has been given the authority to order the termination of swing shift QA/QC personnel." Additional requirements of the memo included: (a) the order was to be presented in writing listing reasons, date, time and signature; (b) a telecon was to be made to the QC Supervisor or QA Manager with all specifics leading up to the order; (c) complete and sign the termination slip; and (d) leave the QC Supervisor a memo with all the specific information concerning the termination. The above memo was endorsed by the WBG QA Manager by memo No. PWS-063, dated December 5, 1979.

The WPPSS QA Program Manual Volume II procedure QAP-2 (organization), paragraph 4.1 requires that contractor responsibilities to the WPPSS Quality Assurance Program include "Developing and implementing Quality Assurance Programs based on the applicable requirements of the NRC's 10 CFR 50, Appendix B, the WPPSS Quality Assurance Program, ANSI N45.2, PSAR and the applicable Addenda of ASME Section III."

The QC supervisor's advice to the QC staff that employment termination will clearly be effected at the request of the construction department is inconsistent with the requirements of 10 CFR 50, Appendix B, Criterion I, as implemented by WPPSS QAP-1, Attachment I, which states, "The persons and organizations performing quality assurance functions shall have sufficient authority and organizational freedom to identify quality problems...."

This is an apparent item of noncompliance. (50-397/80-08/01)

b. Allegation: Materials and services have been procured from sources which have not been qualified in accordance with source evaluation procedures. Specifically:

(1) Various piping material in 1978
(2) Rotameters from Fisher-Porter
(3) Zurn floor drains from Peter-Kiewit

Findings: The allegations were substantiated in part. WBG work procedure WP-154 requires that selections of suppliers and subcontractors "shall be made from the approved vendor list." However, several instances were identified where the requirement was not fully implemented. Various degrees of significance were involved as itemized below:

(1) (a) WBG QA Manager/Puget Sound Pipe letter dated September 11, 1978 states "A review of your program indicates you are supplying ASME material to us in violation of ASME Section III paragraph NA3732." It states "As a result of (that) survey you will continue on our Approved Vendor List, but as a Quality Class II and G supplier only." The survey document was not available in the vendor file, nor was there a definition of the nature of the violation, any identification of the ASME material, or description of the disposition of the material. The incomplete records appear to be a failure to comply with Criterion XVII.

(b) WBG Corrective Action Report #61 dated September 8, 1978 states that "ASME material (E70-S2 bare welding rod) has been ordered from...Enterprise Oxygen who are not certified ASME suppliers on the following P.O.'s: ...215-8708. All purchase orders were reviewed and signed by a quality assurance representative." The approved vendors list for 1978 (a copy held by the purchasing agent) and the current list show Enterprise Oxygen as being an acceptable source only if "ASME III be shipped direct from Airco Sparrow Pt., M.D." and "...a copy of their Certification of Authorization be sent with the shipment." The WBG purchase order #215-8708-Q did not include these conditions, and material receiving report #29410 dated August 21, 1978 identifies heat number 87401; the applicable certificate of conformance dated August 10, 1978 shows that the material originated from Page Welding Division of ACCO (Bowling Green, Kentucky). The disposition of CAR #61 identifies steps taken to prevent recurrence of this error. However, the disposition of CAR #61 does not discuss disposition of the nonconforming material. Identification and disposition of the material is unresolved.

(c) WPPSS/Burns and Roe letter #WPBR-80-140 dated April 7, 1980 states that "Associated Technologies, Inc. (ATI), is performing Quality Class I design services without an approved QA program. These services include the computerized stress analysis of small bore piping systems." The purchase order #215-12390 with ATI is dated December 15, 1978. The licensee's letter discusses required corrective

actions to assess the situation, including reporting to NRC under 10 CFR 50.55(e) or Part 21. Further corrective measures are in progress under the licensee's QA program.

(d) The 1980 WBG material status log shows that control number 49997 was assigned to 200 feet of 4" x 4" x 3/8" square tubing provided by the onsite GE-I&SE contractor. The GE-I&SE was not on the WBG approved vendors list as a material supplier. The material originated at Maruichi, Steel Tube Ltd. and was provided with CMTR #1225-79 through Gilmore Steel Company (which is on the WBG approved vendors list). Traceability through receiving reports was provided in GE-RIR-49458-AT-21.

Similarly, the 1980 GE-I&SE material log shows that control numbers GE-RIR-43180 and GE-RIR-49512 were assigned to 212 feet of 4" x 4" x 1/4" square tubing provided by WBG. WBG was not on the GE approved vendors list. The material originated at Nippon Steel Metal Products Company and Maruichi Steel Tube Ltd. and was provided with CMTR's through Marmon/Keystone Corporation. Although both WBG and GE-I&SE are on-site contractors who hold ASME NA and NPT stamps, neither holds an ASME "N" stamp nor has either conducted a survey of the other from the viewpoint of material supplier capability. GE-I&SE QA Manual Section 9 and WBG Procedure WP-154 (Rev. 3) part 4.4.3 require that materials be procured from vendors who have been surveyed and approved. The questionable material exchange appeared to be an isolated case; no adverse consequences were identified.

(2) WBG purchase order #215-1524 QAR dated May 2, 1977 shows that 26 ASME III Class 2 and 3 rotameters were ordered from the Fischer and Porter Company. Since the Fisher and Porter Company does not hold an ASME N or NPT stamp, WBG took advantage of the scope of its ASME NPT stamp to procure the pressure retaining parts, perform welding on-site, and perform hydrotesting on-site. The Fisher-Porter Company provided designs for part manufacture and was to perform assembly work. WBG had procured the parts from approved vendors (Fasteners Incorporated, Gilmore Steel, Marmon/Keystone, and Alloy Steel Castings - Purchase Orders 10254 Q, 13510 Q, 13632 Q and 7596 Q). However, the Fisher and Porter Company did not hold on ASME N or NPT stamp for design, nor had WBG alternatively surveyed

Fisher and Porter relative to design services, (Fisher and Porter did not appear on the approved vendors list for such services.) Also, WBG had not formally assigned responsibility for design and design calculations. However, this item was being reviewed by the licensee as the result of a request from WBG dated May 13, 1980. The inspectors were subsequently informed that the order has been cancelled and another type meter will be utilized instead.

(3) Peter Kiewit Son's Company was to install a fresh air intake structure per PED-210-CS-0154 dated July 12, 1979. This included two Zurn Model 2G-615 floor drains. The drains were ordered from Northwest Supply Company by PKS purchase order #0389 dated September 21, 1979. A new directive PED-210-CS-0178 dated October 2, 1979 reassigned the drain work to WBG. The drains were received by Peter Kiewit on October 10, 1979, and on October 15, 1979 they were turned over to a WBG warehouse teamster. (The drains were installed without being processed through WBG receiving inspection). Subsequently, WBG performed receiving inspection on March 20, 1980 with report #215-IR-5153 notation that proper material documentation was not available. In response to a question regarding quality requirements, Burns and Roe issued PED-215-B-2835 accepting the manufacturer's September 24, 1979 letter of conformance to applicable ASTM standards as sufficient. A WBG material receiving report was issued April 1, 1980, reviewed by WBG QA Manager, accepting the drains. Although Northwest Supply Company is on the WBG vendors list, the Peter Kiewit Company is not on the list, and has not been surveyed by WBG as a material supplier.

Item (1)(a) represents an apparent item of noncompliance relative to 10 CFR 50 Appendix B Criterion XVII requirements to maintain identifiable and retrievable records of reviews, inspections and audits.
(50-397/80-08/02)

In the opinion of the investigation team, items (1)(c), (1)(d), (2) and (3) represent unusual situations where rigorous steps were taken to assure acceptability of the materials in spite of minor handling/processing discrepancies. The acceptability of these products is not in question, and corrective actions specific to these items does not appear warranted.

Item (1)(b) represents an item identified by the licensee's internal QA program, where additional information is required to ascertain the thoroughness of corrective actions and will be examined during a subsequent inspection. (50-397/80-08/17)

c. Allegation: WBG management has deliberately not provided meaningful acceptance criteria for inspecting welds of Power Piping Company pipe hangers arriving on-site the last 3-4 months (February - June 1980).

Finding: The allegation was confirmed. The WBG Receiving Inspection Checklist Form NF-12 includes a check for workmanship. Although the receiving inspectors were not certified welding inspectors, they had some welding background and attempted to apply AWS-D1.1 type criteria in evaluating workmanship of pipe hangers supplied by Power Piping Company. They did not check weld sizes, since the hangers were catalog items and the catalog did not define weld sizes. However, they did note arc strikes, cold lap, non-fusion, porosity and rejected some components for poor weld appearance (IR# 4661, 4696 and 5237). The WBG QA and project management engineers dispositioned these as acceptable in accordance with the "manufacturer's weld standards" and "commercial standards." The inspection checklists for Power Piping Company hangers were modified to designate the workmanship criteria as "commercial standards."

The receiving inspectors stated they were verbally told that commercial standards meant that "if it looked like it would hold together it was acceptable." No written definition was available. For the items being inspected, the surface features are not rejectable under the applicable acceptance criteria of ASME III, Section NF5230/5360. The designation of commercial standards conforms to the code.

During the review of this item, the NRC inspector examined support brackets which pass hanger loads to anchor points. These are designed as Power Piping Company Figure 350 brackets; each includes four fillet welds and catalogs show load ratings of 3,000 to 123,000 pounds. The fillet welds of various size brackets are not uniform on each bracket and in many cases appear overly flat in profile. Weld leg sizes of 1/8 to 3/16-inch were observed on installed hangers #RHR-146, RHR-147, RHR-120 and SW-19, and on parts in the warehouse (QC #43790, #48794 and #39910).

The Power Piping Company catalogue does not define required weld sizes. However, the company representative stated the design minimum is 1/4-inch for fillet welds. This matter will be examined further following the licensee's action to identify applicable acceptance criteria and evaluation of received material. (50-397/80-08/03)

d. Allegation: Corrective Action Reports (CAR) and Inspection Reports (IR) written by QA/QC personnel are sometimes cancelled by WBG management personnel without a reason given and are destroyed without the identified discrepancy ever being evaluated or resolved. (Inspection Note: Numerous interviews with personnel resulted in this common complaint and the expression of frustration with the WBG practice of voiding CAR's and IR's).

Finding: The allegation was not effectively substantiated.

(1) The inspectors were provided with copies of IR's and CAR's which identified quality problems. Below is a partial listing of those documents for which it was stated that no record was available to those CAR's or IR's having ever been issued and/or resolved or adequate corrective action taken.

Document	Date of Document	Problem Identified
IR	4-1-80	Violation of previously rejected pipe (HT Nos. N12476 and N12477)
CAR	4-5-80	Pipe HT Nos. N12476, N12477, and J710449 visually inspected and appeared to be seamed pipe in violation of purchase order requirements.

(cont.)

Document	Date of Document	Problem Identified
IR	3-31-80	Incorrect interpass temperature, purge not initiated during welding, and weld record documentation deficiencies for Drawing CAS-4443-1A
IR	2-27-80	Drawing DW 2555-6: Failure to verify purge and perform visual inspection on welds 9 and 9A.
IR	3-26-80	Drawing SW-303-4.6H: Support SW-249 Violation of Work Procedure (WP) 42 in that authorized Inspector had not reviewed Form NF6A Rev. 2 as required.
IR	4-7-80	Support FPC-50: Authorized Inspector did not review Form NF6A for welds W5-R1, W6-1, 7-1 and W8-R1 as required by WP-42.

Examination of these items disclosed the following respectively:

(a) The QA engineer who would have docketed this item stated that he told the QC inspector this was not a proper IR. The QC inspector then took all copies of the proposed IR and left, making it difficult to obtain a copy for the record.

(b) There is no record of this CAR being issued; however, these two heats of pipe are in quarantine and are being investigated on this question. Inspection of this pipe has shown it to be a seamless pipe, the apparent seam indication resulted from the extrussion process. Additional NDE of the pipe has shown much of it to contain longitudinal cracks of substantial length, making it unfit for service.

This item will be examined further following the licensee's final dispositioning of this pipe. (50-397/80-08/18)

(c) While this IR could not be located in the work package, the problem had been identified and was documented as a preliminary punch list finding to be dispositioned accordingly.

(d) The IR was docketed as number 5043 dated February 28, 1980 and is in the work package.

(e) The IR was docketed as number 5196. The pipe in question was removed at the request of the Authorized Inspector.

(f) The IR was docketed as number 5248 and was in the work package for dispositioning.

The WBG QA Manual Revision 14 Section XVI (Corrective Action), in paragraph 16.2.1 states "The Corrective Action Report -- is a form assigned a unique serial number which is used to document quality system deficiencies....". The WBG procedure WP-150 (Corrective Action) does not appear to contain any requirements to implement this QA manual requirement.

The WBG QA Manual, Section XV (Control of Nonconforming Conditions) in paragraph 15.3.2(b) states "The QA Support Supervisor obtains a unique consecutive control serial number for each report..." and apparently does not allow the destruction of IR's which had not been validated. The WBG Procedure QAP-5 (Control of Nonconforming Conditions) in paragraph 3.1.3 also states "The QA Support Supervisor is responsible for assigning a unique consecutive serial number for each inspection report..." and further prescribes in paragraph 4.1.2 that "Cancelled IR shall be marked "Void"... and bear dated signatures of NRB members complete with a statement justifying cause for cancellation. The cancelled IR shall be returned to the initiator for notification purposes so hold tag can be promptly removed." The inspector observed that attachment 5.1 of the QAP-5 contains an inconsistent requirement that the Senior QA Engineer review the IR and if not valid to destroy the voided IR.

The system in use does require the "blue" copy of the IR to be placed in the work package and left there until owners review even though the IR may be voided and discarded per se. Therefore, a record of the inspection finding is not lost. The inspector questioned the accuracy of the record since no record is made

of the IR and, should it be discarded, the finding could be lost with no one the wiser. This item will be examined further following the licensee's review of the general area of handling of adverse inspection findings.
(50-397/80-08/04)

(2) Pursuant to the examination of material traceability allegations, the inspector examined the WBG stores requisition procedure WP-26 and discussed the implementation of the procedure with material control personnel. In addition, the inspector examined a WBG QA Audit (No. 215-9-042) performed September 28, 1979 to verify the implementation of control of traceability of equipment and material by store requisitions. The audit found significant deficiencies in the implementation of WP-26. CAR Nos. 118, 121, and 123 were subsequently issued on October 19, 1979, October 19, 1979, and October 24, 1979, respectively, with an action due date of 11-79 assigned to CAR's 118 and 123. No due date was assigned to CAR-121. As of June 12, 1980, the above identified CAR's had not been responded to or closed out. WBG personnel then brought a June 6, 1980 memo to the QA Support Supervisor from the Document Coordinator, to the inspector's attention, which noted that these CAR's had not been responded to. Discussions on June 12, 1980 with the QA Support Supervisor indicated that no action had been taken in response to the memo.

Paragraph 16.4.5 of the WBG QA Manual, Section XVI (Corrective Action) states "Responses to CAR's shall be provided by the applicable department head within 10 working days from the date of receipt and returned to Quality Assurance for evaluation." Furthermore, PD-86 (Corrective Action Report) contains no requirements regarding timeliness of corrective actions or responses.

This item will be examined during a future inspection following the licensee's evaluation of the WBG corrective action control system.
(50-397/80-08/04)

e. Allegation: Work continued on support FDR-385 after the issuance of a nonconformance report which was contrary to the requirements of procedures.

Finding: The allegation was confirmed; however, this was identified by WBG personnel on June 17, 1980. An Inspection Report had been written documenting this fact and was in the process of entry into the IR system for resolution.

The resolution of this item will be examined during a future inspection.
(50-397/80-08/05)

f. Allegation: Laminations (cracks) that had been identified by the NDE contractor (Northwest Industrial X-Ray, Inc. (NIX)) had not been followed up properly and acceptance standards had been improperly referenced to the wrong code.

Finding: The allegation was confirmed. The allegers had supplied the investigators with copies of NIX liquid penetrant examination reports Nos. 230 (Dtd 7-31-75), 244 (dtd 8-20-75), 143 (dtd 4-1-75), 145 (dtd 4-3-75), and 145 (dtd 4-3-75). In addition, the allegers supplied copies of NIX Magnetic Particle (MT) reports Nos. 144 (dtd 5-7-76) and 145 (dtd 5-8-76). LP Report Nos. 143 and 145 documented Liquid Penetrant (LP) tests performed on quality class II, non-safety related piping and, therefore, not subject to the requirements of 10 CFR 50, Appendix B on the ASME B&PV code, Section III. The investigative findings related to NIX LP report Nos. 230 and 244 and MT reports 144 and 145 are detailed in paragraph 6.b(3).

g. Allegation: Weld joints that require more than 2 repairs are cut out so that engineering (B&R) approval is not required.

Finding: This allegation was confirmed. Contract specification 17A states that no more than two repair attempts shall be permitted without the approval of the B&R engineer. The inspector reviewed the weld record package for field weld #4 in system RCIC-659-26. This particular weld joint, now identified as field weld 4-3, underwent 7 welding attempts before final acceptance. This includes the original weld, 2 repairs, 3 cutouts, and the final weld. Since WBG does not consider cutouts the same as repairs, B&R approval was by-passed and consequently never made aware of the welding problem.

This matter is unresolved pending licensee evaluation of the contractor's general practice.
(50-397/80-08/06)

h. Allegation: No ANI signoff of final weld records (Form NF-6A).

Finding: This allegation was not substantiated. The authorized ANI was aware of this problem during its occurrence. The problem has since been resolved to the ANI's satisfaction.

i. Allegation: WBG is buying piping to ASME 1977 Edition without certifying that the piping meets the requirements of ASME 1971 Edition, Winter 73 Addenda, as required in Section 150 "Pipe Supports" for Contract 215."

Finding: This allegation was not substantiated. Burns & Roe has identified this concern and is taking the necessary action to assure that the 1971 code is complied with.

j. Allegation: There are blanket NCR's for dispositioning anchor bolt problems.

Finding: The allegation was not confirmed. The NCR's dealing with anchor bolts were reviewed. Only one such NCR was found. NCR 03676 of 9-1-78 lists a large number of Inspection Reports (IR's) which had been saved for a final dispositioning NCR. The IR's dealt with embedment depth requirements not met for anchor bolts. The anchor bolt engineer stated that WPPSS original criteria for anchor bolts was overly conservative and the revised criteria were closer to the manufacturer's recommendations for embedment. The inspector spot checked revised embedment depth criteria and found them to be in accordance with manufacturer's recommendations. The inspector had no further questions on this item.

k. Allegation: Inspector training is inadequate.

Finding: This allegation was not substantiated. The inspector reviewed the training program which consists of three types of training, training class, self-reading with critique, and on the job training. A review of the training records showed that the majority of the training is self-reading of procedures that apply to the employee's activities. This was confirmed by the NRC inspector during interviews with individual QC inspectors. The employees feel that this is inadequate and that the program should be expanded to include other learning techniques such as seminars, films, training classes with credits toward a certificate in a specific discipline, etc. The records show that new QC inspectors work with a first line journeyman inspector until the journeyman feels the individual is qualified (i.e., usually 5-6 weeks for structural steel and pipe inspectors). Although the benefits of an improved training program are obvious, the present program appears to be meeting code and regulatory requirements.

l. Allegation: Apprentice inspectors are performing inspections without the presence of a journeyman inspector.

Finding: This practice was confirmed. Initially, inexperienced apprentice inspectors perform their work activities under the supervision of a journeyman inspector. The journeyman will accompany an apprentice on all inspections until the journeyman feels confident that the apprentice can evaluate and approve (sign-off) an inspection activity without supervision. However, there are no qualification requirements defining the minimum capabilities that qualify the apprentice to perform quality assurance functions on an independent basis. ANSI-N45-2.6 is an industry standard relevant to such qualifications, but this licensee is not commited to this standard.

The requirements of 10 CFR 50, Appendix B, Criterion II states that the quality assurance program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. It is not apparent that the WBG QA/QC program provides assurance that suitable proficiency is achieved and could permit inexperienced apprentice QC inspectors to perform independent sign-offs of inspections of nuclear quality systems. This matter was brought to the attention of the licensee for consideration.

m. Allegation: QA Manager did away with eye exams from August 1979 until May 1980.

Finding: This allegation was confirmed in part, i.e., eye exams were verbally cancelled by the QA Manager on February 22, 1980. At this time, WBG submitted WP-157 Rev. 1 which deletes eye tests to the licensee (B&R) for approval. B&R did not accept Rev. 1. Consequently, WBG submitted WP-157 Rev. 2 with eye test reinstated. This was approved by B&R on May 1, 1980. Eye examinations were given to all required QC personnel by May 6, 1980. Although this allegation is correct, it is without safety significance because eye exams were given prior to February 22, 1980 and also by May 6, 1980. All QC personnel, including new hires, appeared to have passed the required eye tests. Therefore, QC inspection activities during the time period in question was performed by personnel having acceptable eye exams.

n. Allegation: Construction controls QA. The Project Manager brow beats the QA Manager.

Findings: The allegation was not substantiated. Discussions with the personnel interviewed, including QA/QC did not indicate this to be the case. The only specific example provided by those interviewed was that discussed in paragraph 3.a where the Swing Shift Construction General Superintendent was specifically

given the authority to order the termination of swing shift QA/QC personnel in November 1979. This authority was stated to be necessary since someone on-site must have the ultimate authority for the immediate termination of personnel in the event of physical disagreement between the crafts and QA/QC personnel. Discussions with those interviewed disclosed that this authority was never exercised. However, this previously cited as being contrary to the program requirements of Criterion I in Appendix B.* During the course of the investigation, the NRC inspectors did not identify any instance where construction - cost and schedule - were dominate over the QA function.

o. Allegation: The WBG Field Superintendent will do no wrong until caught.

Finding: The allegation was not substantiated. The investigation team was not supplied any specifics on this allegation, nor did the results of the investigation disclose this to be the case.

4. Procedures and Procedure Implementation

a. Concern: Procedural implementation of code and specification requirements

Finding: WBG had, in late 1979, developed a matrix listing specification requirements with the intent of cross referencing these requirements to procedures to assure that the work procedures and quality control procedures properly implemented the specification requirements. Discussions with WBG personnel indicated that this task had not been completed and that the matrix was currently out of date due to the number of Project Engineering Directives, modifying the specification, issued by Burns & Roe since the original generation of the matrix. The inspector observed a number of instances, some of which are documented in other paragraphs of this report, where the WBG procedures did not appear to address or implement the requirements of the code or specification.

*NOTE: The need for this authority was questionable since a QC Supervisor was on the swing shift and had the authority to immediately dismiss QA/QC personnel in the event of personnel conflicts.

A number of WBG Project Directives (covering such quality related activities as Document Control, Field Change Reports, As Built of Large and Small Bore Isometrics, Hanger Material Control, Corrective Action Reports and Control of Nonconformance Reports) had not been reviewed and approved by the owner or engineer. This was recognized by a Burns & Roe/WPPSS audit (No. 215-79-4) performed in September 1979. The finding was documented by quality finding report No. 8. Corrective actions had not been completed as of June 1980.

b. Concern: Problems associated with nondestructive testing.

Finding: The investigators were referred to WBG Inspection Report No. 4219, by the allegers, in reference to their concerns regarding improper cancellation of inspection reports.

Inspection Report 4219 was written on September 7, 1979. The author of the IR documented concerns regarding the conducting of NDE liquid penetrant and magnetic particle examinations. The assigned disposition required a random selection of welds in the turbine generator and reactor building, on ASME lines, for re-inspection in the presence of the Authorized Code Inspector and a review of NDE personnel certifications. In addition, a study was to be performed of the results for trend identification.

On September 13, 1979 revision 1 to the disposition was assigned noting that efforts to substantiate the author's claim failed to disclose any factual information to support the IR. The revision 1 specified that an audit of the NDE subcontractor was to be performed on September 21, 1979 and that "mini" audits of field examinations would be performed by the WBG Level III examiner during the time period from September 13, 1979 until the audit performance date. The revised disposition was approved by the WBG nonconformance review board and the Authorized Code Inspector on September 14, 1979. The IR was then cancelled by WBG on September 14, 1979 with the note that all further investigative efforts and disclosures would be documented on audit records. The audit was conducted as scheduled on September 21, 1979. The program was found to be adequate as written and additional review found field implementation in compliance with the manual. The inspector had no further questions on this item.

In the process of examining the WBG NDE Level III Examiner's surveillance report files to verify completion of IR 4219 specified corrective action, the inspector observed that two surveillance reports dated September 12, 1979 identified that,

during the performance of magnetic particle examinations of material less than 3/4" thick, the amperage was not changed following the changing of prod spacing from 4.5" to 3", increasing the amperage from approximately 100 amps per inch to 150 amps per inch. The report identified this as a noncompliance with specifications. The WBG QCP-2 (Non-destructive Testing Procedure for Magnetic Particle Inspection) required in paragraph 5.7 that magnetizing current shall be used at a minimum of 100 and a maximum of 125 amps per inch of prod spacing for sections greater than or equal to 3/4" thick and to 90-110 amp per inch of prod spacing for sections less than 3/4" thick. The inspector questioned the Level III on the corrective action taken in regard to the findings. The Level III observed that apparently no corrective action had been taken. The licensee subsequently questioned the examiner who had made the observation and found that he had the technicians involved take the appropriate corrective action. They believed this to be an isolated case.

QAP-5, paragraph 1.1, prescribes that the "procedure provides the responsibilities and methods for the control of nonconforming conditions found in...construction activites" and further prescribes in paragraph 3.1.2 that "Quality Assurance, Quality Control, and Quality Engineering personnel shall initiate an inspection report (IR) upon discovery of an apparent discrepant condition."

The failure to initiate an inspection report upon the observation of nonconforming construction activity is an apparent item of noncompliance.
(50-397/80-08/07)

c. Allegation: WBG procedures do not reflect contract specification requirements in the area of removing attachments.

Finding: This allegation was not substantiated.

Contract Specification Division 17, Section 17A requires the ground area resulting from removal of temporary welded attachments to be "magnetic particle or liquid penetrant inspected to insure freedom from defects." Work Procedure No. 57 "2-1/2 Inch and Larger Jobsite Pipe Fabrication Procedure" paragraph 6.10 appears to address the temporary welding of attachments. However, WP-57 does not appear to address the removal of temporary welded attachments. Work Procedure No. 117, "Field Installation of Pipe Supports," paragraph 4.2.3, does indeed require, "Temporary welds to pressure boundaries and pressure boundary attachment welds that are removed shall be ground smooth and MT or PT performed. Temporary welds will be documented on Attachment Form NF-286." The licensee agreed to consider the need for inclusion of this requirement in WP-57 also.
(50-397/80-08/08)

(2) WP-42 "Weld Record Forms" paragraph 2.9 covers Form NF-286 which is a "Record of Temporary Attachment Welding". Paragraph 2.9.1.3 states that the QC Inspector will then schedule NDE inspections when required after removal of an attachment file. This apparently does not comply with Contract Specs. 17A or 17C which require NDE inspection after removal of all temporary attachment welds.

(3) Page 2 of Form NF-286 contains a note which states that the temporary attachment welding record will not necessarily form a part of permanent documentation. This record appears necessary to show compliance to the contract Spec. and ASME Section III requirements.

The above program discrepancies do not appear to be consistent with contract specifications and ASME Section III requirements for temporary attachments. This item will be examined further during future inspection following the licensee's evaluation of this potential problem. (50-397/80-08/10)

5. Quality Program Implementation - Hardware Related

a. Concern: Adequacy of construction of supports.

Finding: During the course of the investigation, the inspector conducted several in-plant tours while investigating specific allegations. In the conduct of these tours, particular attention was paid to the adequacy of construction on other supports. The following observations were made.

(1) Pipe to Support Clearances in Excess of Requirements

(a) Support No. EDR-362: The support detail drawing for support EDR-362 requires 1/16" clearance between the support and pipe or both sides of the pipe. QCP-24, Attachment 2, titled Box in Clearance, requires that for systems under 200° F and piping sizes 2-1/2" to 12", the maximum allowed clearance between support and pipe when summed on both sides is 1/8". Contrary to the above requirement, the inspector observed that the summed clearance was slightly in excess of 3/16". The support was inspected and accepted by

The inspector's investigation of this allegation resulted in an overall review of WBG activities regarding temporary weld attachments. This review identified the following findings:

(1) WBG Quality Assurance Manual Section 10.0, paragraph 10.3.1 states that all welding including tack welding is performed by welders qualified as required by Section III and Section IX of the ASME Code. ASME Section III, requirement NX-4321(b), states that procedures, welders, and welding operators used to joint temporary attachments to pressure parts, or support elements, and to make temporary tack welds used in such welding shall also meet the requirements of the Article (NX-4320 Welding Qualifications, Records and Identifying Stamps). ASME requirement NX-4321.1, Tack Welds, states that tack welds shall be made by qualified welders using qualified procedures. Requirement NX-4321.2, Temporary Attachments and Their Removal, states that temporary attachment welds are permitted provided the material is compatible for welding to the component material, the welder and welding procedure are qualified in accordance with ASME Section IX. 10 CFR 50, Appendix B, Criterion IX, Control of Special Processes, states that measures shall be established to assure that special processes, including welding, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes.

The inspector examined the record packages for pipe spools LPCS-756-5.7, LPCS-756-19.21 and LPCS-2271-1. The records indicated that temporary weld attachments had been made to these parts; however, the records failed to reveal the required weld record for welding the temporary attachments. This appears to be an item of noncompliance with Appendix 13, Criterion 9.
(50/397/80-08/09)

WBG Engineering and QC on March 22, 1979. This is an apparent item of noncompliance.
(50-397/80-08/11)

(b) Support RCC-457: The support detail drawing for support RCC-457 requires 1/16" typical between pipe stop attachments and support on both sides. QCP-24, Attachment 6, titled Stop Clearance, specifies that the sum of clearances between both pipe stops and the support structure be 1/8" maximum. Contrary to the above requirement, the actual clearance between both upper pipe stops and the support was a total sum of 7/32". This support had been inspected and accepted by WBG QC on December 7, 1979 and the EQA audit was done on January 7, 1980 without this discrepancy being identified. This is an apparent item of noncompliance.
(50-397/80-08/11)

(2) Undersize Fillet Welds

Support RCC-457: The detail drawing for support RCC-457 requires that 3/16" fillet welds be used to attach the pipe stop attachment to the pipe. The actual fillet weld size observed on three of the four stop attachment to pipe welds was about 1/8". This support was inspected and accepted by WBG QC on December 7, 1979; the EQA, performed on January 1, 1980, also did not identify this discrepancy. Project Directive No. 75 (Hanger Engineering Standards), paragraph 10.1.2, specifies that "Weld size less than shown on As-built" is an unacceptable condition.

However, the design load on this connection is less than 250# and the inspector had no question regarding its adequacy. The connection involved a skew joint and the QC/EDA inspectors apparently did not have sufficient training/criteria to evaluate the geometry. Since the licensee plans a 100% as-built reinspection of all safety related hangers, the licensee plans to clarify this item and assure training of QC personnel relative to this item prior to commencing that activity. This is unresolved pending review of these efforts.
(50-397/80-08/)

b. Allegation: There are laminations in the steel in the steam tunnel supplied by Pybus Steel.

Finding: The allegations were confirmed. The investigation resulted in two separate problem areas regarding Pybus Steel, a material problem and a welding problem. Per discussion with

the WPPSS metallurgist and the B/R Lead Welding engineer and as documented on NCR-215 04606, the material problem involved material from Pybus which was supplied to Pybus from U.S. Steel. Pybus provides prefabricated pipe support parts for contract 215 field assembly.

Pybus letters dated January 9, 1979, February 5, 1979, and February 6, 1979 identified defects in two heats of material. The WPPSS metallurgist identified the defects as laminations in one heat and overheating at forging or during heat treat in the other heat. U.S. Steel withdrew one heat of material. The disposition of the NCR required removal from the site of all material from both heats identified by Pybus Steel. WPPSS submitted a 50.55(e) report on May 31, 1979 identifying the two heats of material and the action to have the heats removed from the site.

At the time of the inspection, there were three NCRs dealing with welding problems related to Pybus welding. NCRs 215-05258 and 05259 of April, 1980 deal with beams 331H1-1 and 331H-2 respectively. These beams were trimmed by Contract 215 to suit field conditions. The as trimmed beams had unacceptable linear indications in the weld fusion zone as indicated by magnetic-particle examination. The indication appeared to be lack of fusion/under bead cracking about 3/4" wide and of undetermined length. One weld in each beam was ultrasonically examined in accordance with AWS D.1.1 methods and acceptance criteria. A full length (4 ft.) indication was determined to exist but the severity level as determined by the AWS D.1.1 45° angle beams search was acceptable. The NCR was dispositioned that the beams were acceptable to AWS D.1.1 UT standards and the MT indications should be ground out and repair welded. The grinding out of indications was not successful in that an acceptable MT could not be obtained because the indication could not be ground away. In any case, the two beams were rejected based on MT results and will be reworked or replaced by Pybus.

NCR 04993 of October 29, 1979 describes weld penetration deficiencies identified in Pybus Steel beam 321B1. The NCR shows the defect to be about 1/4 inch lack of root penetration or lack of fusion in the root for the full length of the beam. The welds were accepted based on an ultrasonic determination which defined the extent of the lack of fusion area. This was not the AWS D.1.1 angle beam examination which measures a defect severity level but rather a straight beam inspection to define the lack of fusion area. Per the material attached to

the NCR the weld defects were accepted by the lead civil engineer. As documented on RFI 215-6371 the B&R home office was not contacted. The NCR indicates that these beams are subjected to reverse loading and are stressed to over yield in the faulted condition; therefore, the licensee has been asked to consider further investigation to assure adequate engineering analysis was accomplished. This aspect of the beam 321B1 will be inspected further on a future inspection.
(50-397/80-08/17)

The problems identified in the above NCR's all indicate that a possible welding control-problem may exist at Pybus Steel. In addition, in a meeting on May 2, 1980, attended by Lead Mechanical Contract Administration Engineer, the WPPSS Construction Manager, QA Engineers, WPPSS Metallurgist and the Lead Weld Engineer, the problems were identified with Pybus welding. Specific problems mentioned were: oversized beads in excess of procedure, beam 331 H1-1 had lack of fusion, beam 331 H1-2 had underbead cracking - not an isolated defect, and root magnetic particle examinations were not done.

The three NCR's dealing with welding problems were reviewed for 50.55(e) reportability in accordance with QAP-11, Reporting per 10 CFR Parts 21 and 50.55(e) and PMI-4-S Project Control of Nonconformances. The licensee was asked to reconsider the reportability of these items to the NRC per the provisions of 10 CFR 50, Part 50.55(e).
(50/397/80-08/13)

c. Concern: Condition of structural steel inside containment.

Finding: During tours inside the containment vessel, conducted in the process of examination of alleged discrepancies, the inspector observed instances where structural steel members had significant areas of grindout or gouges and temporary attachments still in place. For example:

(1) The following gouges or grindout areas were observed to be circled in red on the underside of heavy structural steel members at about the 512' elevation of containment inboard of pad P-83 attached to the containment vessel wall:

(a) Two gouges in beam underside base metal near a spring can support - each gouge about 1-1/2" long and about 1/8" deep.

(b) One gouge about 3/8" long and 1/8" deep in base metal on the underside of a beam outboard of pipe 544-4.

(c) Three base metal gouges near a spring can support B&R had issued PED-215-C5-3596 on May 28, 1980 providing that 1/16" shall be maximum allowable depth of grind marks on structural steel and that all marks in excess of 1/16" shall be either repaired or reported for further evaluation.

The licensee's actions to assure identification and repair a future inspection.
(50-397/80-08/19)

(2) In the vicinity of the structural steel attachment point, for a diagonal brace for support RCIC-75, the inspector observed the following:

(a) Three arc strikes exist near a beam gusset plate attachment weld.

(b) Approximately 20 attachment welds were made to the structural steel beam. Weld electrodes had been tacked to the beam evidently to hold heat treatment blankets in place (one electrode had been tacked onto an existing structural steel weld zone) and thermocouple attachment clips had been tack welded to the beam.

The inspector requested evidence that these conditions had been identified for resolution; however, WBG Field Engineering was unable to locate such evidence. This is considered an unresolved item.
(50-397/80-08/14)

d. Allegation: Shop weld lack-of-penetration in five adjacent welds of pipe spools MWR-975-4&5 represent a significant deficiency which should have been reviewed regarding other piping from the same vendor.

Finding: The allegation was not substantiated. The MWR-975-4 and 5 spools were part of a decontamination system which normally would not see pressure and flow conditions except for infrequent system cleanup actions. The system is not classed as safety related and was procured under specifications which required only surface examination of completed welds (i.e., ASME III Class 3 and quality Class II). Such surface examination

does not reveal lack of weld penetration. WBG inspection report #5503 dated May 12, 1980 documents the pipe defects and their disposition; it did not include review of additional shop welds in the MWR system nor other ASME III Class 3 piping systems from that vendor. A nonconformance report was not issued, which would have directed the condition to the attention of the Burns and Roe engineers.

The ASME Section III Class 3 code requires welding by qualified welders in accordance with qualified procedures, in addition to materials and other workmanship considerations. It presumes proper welding, at the same time allowing that some defects may occur. It requires surface examination to assure absence of through-wall defects or defects at points of high stress at the pipe surface. It does not presume that generally defective welding practices are acceptable. For safety related systems, NRC considers the ASME code requirements as minimum requirements. In the inspector's opinion, the existence of general lack of penetration in five adjacent welds in two pipe spools raises questions regarding general control of welding in the vendor's shops. It appears reasonable to expect this matter to be identified by the licensee's QA program and evaluated relative to similar safety related piping. The WBG personnel who dispositioned this item are the same personnel responsible for safety related systems. The licensee has been asked to evaluate the existence or nonexistence of nonconforming conditions on similar safety related pipes supplied by this vendor. (50-397/80-08/15)

e. Concern: Purge gas was required, but not used, for welding stainless steel thermocouples to main steam line BCG.

Finding: Eighteen stainless steel thermocouple wells were welded to stainless steel nozzles on 10-inch pressure relief lines of the main steam system. The welds were made in October 1979, and were designed as field weld 2 on piping isometric sketches MS-538-1 through MS-555-1. Specification 2808-215 Section 17A paragraph 3.3 requires inert gas purging until 3/16" thickness is deposited. There are no exceptions noted. The WBG General Welding Standard #2, part 7 requires inert gas purge only for groove welds, apparently not for socket welds.

The WBG "2-inch and Smaller Socket Weld Record" for each weld showed that WBG weld procedure #5 was originally specified for

the weld, but that this was changed to procedure #6 prior to welding. Procedure #6 is for carbon steel to stainless steel welding and requires no internal argon purge. Procedure #5 is for stainless steel to stainless steel welding and requires internal argon purging only for groove welds in accordance with WBG General Welding Standard #2 Part 7. The weld records showed that purge was originally specified with procedure #5, but was marked "Not Req'd" when procedure #6 was later designated. Inspector's entries at the crossed-off "purge" item of some of the checklists suggest that purge may have been provided in some of the cases in spite of the deleted requirement. (e.g., weld #2 of #MS-545-1). Lack of purging, for the socket welds, appeared to be in accordance with WBG procedures, but not the specification, which does not exempt socket welds from purging.

Weld procedure #6 calls for use of E309-16 weld electrode and the weld records show that this was used. Weld procedure #5 calls for E308-16 electrode. The improper procedure #6 was specified and used, contrary to specification 2808-215 Section 17A paragraph 3.4. On July 14, 1980 B/R issued NCR-05405 relative to this matter. The failure to control welding of stainless steel thermocouple wells in accordance with applicable qualified procedure #5 represents a noncompliance with Criterion V of Appendix B of 10 CFR 50.
(50-397/80-08/16)

f. Allegation: Welding washers on hanger support plates when concrete anchor bolts are in place and torqued has resulted in anchor bolt failure.

Finding: The allegation was confirmed. Through interviews with the responsible contract 215 field engineer and the B&R civil engineer, is was established that hanger LPCS-3 had one support base plate pull out of the concrete during either welding of a washer or torquing of anchor bolts (the personnel interviewed were not entirely certain which work was in progress at the time).

Support LPCS-3 is a large pipe support with ten 1" thick base plates attached to concrete and tied together by 6" tube steel. The 1" thick base plates were stiffened by welding on 1" x 3" stiffener plates after the base plates had been torqued to the wall. The plate that failed had 20 each 1/2" Hilti Drop In (HDI) anchors embedded 2" deep in the concrete. The area of failed concrete covered the entire area of the base

plate and was about 2" deep. A nonconformance report was written and dispositioned to repair the failed plate. Support LPCS-3 has a duplicate base plate directly below the base plate that failed. The B&R engineer who dispositioned the NCR states that the failed plate was considered an isolated case which he understood was caused by not loosening the anchors prior to welding. The inspector examined the applicable pipe support and anchor installation procedures and found that neither procedure cautioned against welding stiffeners with tightened anchor bolts. The inspector further determined by discussion that the box beams are welded to base plates after the base plates are bolted to the walls.

The inspector examined NCR's and determined the following additional base plates had full shear cone type concrete anchor failures:

Support SW-218	NCR	04721	7-2-79
Support RHR-937N	NCR	04709	6-27-79
Support RHR-965N	NCR	04775	8-15-79

The B/R anchor bolt engineer stated the support RHR-965N did not have stiffeners welded on at the time of failure. The failed base plate had 47 (1/2") HDI anchors which were being torqued when failure occurred. The plate being torqued was flat whereas the concrete surface was curved. The support has a highly restrained geometry. On this support, the engineer had concrete tests done and determined the concrete was satisfactory and not the cause of the failure.

The NCR's indicate that some generic problem(s) are occurring with the practice of welding on support base plates which are bolted to the wall and secondly with support base plates which use many small anchors. This may also include items such as reamed out bolt holes and warpage due to many small plate washer welds. The concern is that other installations which have not failed may have lost a significant portion of their total load capacity because of the current installation practices.

The above NCR's were reviewed for 50.55(e) reportability in accordance with QAP-11, Reporting per 10 CFR Parts 21 and 50.55(e) and PMI-4-5 Project Control of Nonconformances. The licensee has been asked to consider submittal of a 50.55(e) report in accordance with these requirements.
(50-397/80-08/20)

6. Minimum Pipe Wall Thickness

a. Allegation: Insufficient management action has been taken regarding significant deficiencies in pipe wall thinning:

(1) Weld end preparation counterboring results in marginal pipe walls. (e.g. line RCIC 659).

(2) Reduced corrosion allowance on main steam piping results in marginal pipe walls.

(3) LPCS and HPCS pipe pitting results in marginal pipe walls.

(4) Small bore piping ends were ground excessively for socket weld fitups.

Finding: The allegations were confirmed in part. However, each of the above items has been identified through inspection and engineering activities under the QA programs of WBG and Burns and Roe. Corrective actions and evaluation programs to date have been documented and are continuing.

(1) WBG Engineering/Engineering-QA memorandum dated April 10, 1980 describes counterboring as one factor which reduces pipe wall thickness near welds. Thus, grinding the exterior of the pipe at the weld joint area has the potential to reduce local wall thickness to below the minimum acceptable. Grinding is routinely performed for many weld areas, to provide a weld profile suitable for ultrasonic testing required by the ASME Code Section XI. WBG has documented cases of overgrinding in various inspection reports and has referred this matter to Burns and Roe via Nonconformance Reports #5196, 5237, and 5256 (dated February 22, 1980, April 9, 1980 and April 24, 1980 respectively). Burns and Roe has issued Corrective Action Report #1448 dated May 2, 1980, and related Project Engineering Directive PED-215-M-3337 dated May 5, 1980 (subsequently suspended by letter WNP-2 WBG-215-F-80-1836 dated June 11, 1980). These documents call for revision of specification #215 and WBG work procedures to require ultrasonic wall thickness measurements on weld areas ground for inservice inspection profiles. Burns and Roe has recognized the need to inspect previous work (PED-215-M-3337) and plans to have such work performed by the inservice inspection contractor.

The WBG engineering memorandum of April 10, 1980 recommended an in-depth evaluation/test program and suggested that this matter may be reportable to NRC under 10 CFR 50.55(e). The reportability concern apparently was not conveyed to the licensee, and WBG QA department had no record of a review for reportability. A Burns and Roe evaluation of CAR-1448 was documented on memo dated May 6, 1980, per procedure PM-014.1 and was classified by the QA lead engineer as "potentially reportable". The Burns and Roe QA Supervisor for Deficiencies/Trends had a copy of CAR-1448 and the evaluation memo. He told the inspector on June 18, 1980 that there was insufficient information to determine reportability.

(2) A Burns and Roe Project Engineering Directive PED-215-M-1747 designates a reduction in corrosion allowance for main steam piping (reduction from .120 inch to .090 inch allowance). There is no direction to reduce the required wall thickness below design thickness.

(3) Burns and Roe Nonconformance Report #5997 dated April 17, 1980 describes surface pitting of LPCS and HPCS large bore piping, and questions the validity of ultraonsic testing performed by the pipe supplier Associated Piping and Engineering (AP&E). The matter is still under review by Burns and Roe, with WBG having provided its recommendations May 21, 1980.

(4) Project Engineering Directive #215-M-3336 dated May 9, 1980 requires WBG to conduct ultrasonic pipe wall thickness measurements on all ASME Class 1 socket weld joints, and sampling of Class 2 and 3 joints. A report is to be submitted to Burns and Roe for review and subsequent action. This matter was reported to NRC under 10 CFR 50.55(e), and corrective actions are still under review.

(5) In conjunction with the independent review of the record package for pipe package LRCS-4472-1, the inspector performed a walkdown of the installed pipe. Two gouges were identified on the pipe approximately 30" below weld 8 to LPCS-756-1.4. One gouge was approximately 1/4" x 5/16" x 1/16" deep, the other slightly longer and shallower. The gouges should have been blended in accordance with the requirements of the ASME Code.

The NRC inspectors previously identified concerns regarding piping wall thinning, (Reference IE Inspection Report 50-397/79-16, item 79-16-05). The specific items were addressed by the licensee as discussed in reports 50-397/80-01 and 80-04. The current inspection findings demonstrated that further attention is warranted in several respects of wall thinning causes. The licensee identified minimum pipe wall as a potential generic item and was in the process of formulating an inspection program.

The licensee has agreed to expedite consideration of the WBG engineering memorandum of April 10, 1980 and the Burns and Roe QA evaluation of May 6, 1980 and to determine reportability in accordance with 10 CFR 50.55(e) requirements for notifying NRC of significant deficiencies. (50-397/80-08/21)

b. Concern: Controls applicable to pressure boundary grinding activities.

Finding: In the process of conducting examinations of support and piping isometric packages necessitated by the investigation of numerous allegations, the inspector observed instances where grinding had been performed on pressure boundary piping and questioned the need to verify that the piping minimum wall thickness had not been violated.

(1) Review of Quality Assurance Implementing Procedures

The ASME B&PV Code, 1971 Edition, Section III permits the removal of unacceptable surface defects by grinding or machining provided that the remaining thickness of the section is not reduce below the minimum required and further requires in the fabrication and installation requirements articles that, if an installer or subcontractor performs treatments, tests, repairs and/or examination required by other articles of the code, that he shall certify that he has fulfilled that requirement. The code further specifies that reports of all required treatment and the results of all required tests, repairs and examinations shall be available.

The Specification 2808-215 (Mechanical Installation and Piping Contract) in Section 15B, paragraph 3.6.1, states that "Minor surface defects such as scabs, laps, seams,

dents, gouges, and tears shall be removed by machining or grinding according to the applicable codes and standards. The wall thickness after machining and/or grinding shall be verified by measurement, to be not less than the required minimum wall specified by the referenced code in the Piping Material Specification Sheets."

The inspector examined WBG Work Procedure (WP)-78 (Contouring of Weld Profiles for Inservice Inspection) and WP-114 (Repair of Surface Defects) and observed that neither of these procedures implement the above requirement of Specification 2808-215. In addition, the WBG Quality Assurance Procedure No. 9 (In-Process and Final Visual Weld Inspection) likewise does not appear to implement these requirements).

This item will be examined during a future inspection following the licensee's examination of minimum wall thickness problems.
(50-397/80-08/21)

(2) Observation of Work and Work Activities

The inspector conducted numerous tours of various areas of the plant during the course of the investigation and identified the following discrepancies with regard to obvious grinding on pipe base metal.

(a) Support RCC-457: Adjacent to a 3/16" fillet attaching a pipe stop lug to the pipe, an area was identified where grinding had extended into the pipe base metal while dressing the fillet weld surface. The support had been inspected and accepted by WBG Engineering and QC personnel December 7, 1979. The Engineering Quality Audit had been completed January 17, 1980. The discrepancy had not been identified or documented by any of the above inspections.

(b) Support RHR-322: In the vicinity of a stop attachment to pipe weld, areas of significant grinding into the pipe base metal were observed. There was documented evidence that the pipe attachment shoes had been removed by grinding and rewelded. There was no evidence that the required verification of minimum

wall thickness was identified as required or accomplished. The inspector brought this to the attention of the WBG Chief Field Engineer who took action to perform a minimum wall verification by UT. The documentation of UT examination on June 20, 1980 indicated that minimum wall thickness had not been violated by the grinding.

(c) Support MS-333: The inspector observed that grinding had been accomplished on the fillet welds attaching the Lubrite plate assembly to the pressure boundary and that the pressure boundary near Weld 1 had been ground into during this process. The support had been inspected and accepted by WBG Engineering and QC on March 26, 1980 and this discrepancy had not been identified. Documenting evidence that the required minimum wall verification measurements had been complied with was not available.

The above items will be examined in following up on the licensee's handling of minimum wall thickness problems.
(50-397/80-08/21)

(3) Review of Quality Related Documentation

The following NDE reports were examined.

(a) NIX Liquid Penetrant Examination reports #230 and 244, dated July 31, 1975 and August 20, 1975 respectively, listed examinations performed on safety related pipe spools SW-290-11.20 and SW-297-8.17, in addition to a number of non-safety related spools. The governing specification and acceptance standard identified on the reports was ASME Section VIII. The drawings for spools SW-290-11.20 and SW-297-8.17 identified that these spools were ASME Section III Class III, quality class 1. The examination requirements and acceptance standards for welds in ASME, Section III, Class III piping pumps and valves are specified in paragraph ND-5220. The acceptance standards for liquid penetrant examination specified by the 1971 Edition of the ASME B&PV code Section III contain criteria which are not addressed by Section VIII, namely: (a) rounded indications with dimensions greater than 3/16" and (b) ten or more rounded indications in any

6 square inches of surface with the major dimension of this area not to exceed 6 inches with the area taken in the most unfavorable location relative to the indications being evaluated. The above piping is buried underground and coated externally for corrosion protection and, therefore, could not be examined by the inspector. The changes in the acceptance standards did not appear to have been reviewed or evaluated by the designer. This failure to comply with the design drawing specified criteria appears to be an item of noncompliance with 10 CFR 50, Appendix B, Criterion V.
(50-397/80-08/22)

(b) The following NIX examination reports identified that NDE had been performed on certain quality class 1 pipe spool welds after grinding to remove defects in pipe.

Test	NIX Report No.	Date of Report	Pipe Spool No.
MT	143	5-6-76	SW-296-47.53
LP	230	7-31-75	SW-290-11.20
LP	230	7-31-75	SW-297-8.17
MT	145	5-8-76	SW-250-17.20
MT	145	5-8-76	SW-297-8.17
MT	144	5-7-76	SW-297-8.17

Code required documented evidence of compliance with the requirements of specification 2808-215, Section 15B, paragraph 3.6.1, regarding the verification of pipe minimum wall thickness by measurement was unavailable. This is a continuation of the previously discussed minimum wall problems and will be subsequently reviewed after the licencee's action on this general subject.
(50-397/80-08/21)

7. Material Treaceability and Material Control

a. Allegation: The QA Manager for the piping contractor initiated an interoffice memo which modified procedure specified material traceability requirements.

Finding: The allegation was substantiated. On January 18, 1980 the WBG QA Manager issued an interoffice memorandum (No. PWS-102) to QA/QC personnel regarding hanger traceability which modified the requirements of QCP-24 (Hanger Inspection - Traceable Systems) paragraph 6.5 which states "When a part is cut from an originally identified piece, the identification shall be accurately transferred to the part to be cut prior to the cut." Furthermore, WBG Project Directive No. 75 (Hanger Engineering Standards) in paragraph 7.8.1 states "When a part is cut from an originally identified piece, the identification shall be accurately transferred to the cut part prior to the cut." The memorandum stated that traceability was maintained if (a) traceability information is logged against the item on the detailed parts list or (b) there is a stores requisition in the work package which matches the physical part. QCP-17 (Traceability Procedure) states in paragraph 5.1 that "When a part is cut from an originally identified piece, the identification shall be accurately transferred to the cut part prior to the cut."

Procedure No. QCP-24, Revision 8, appeared to be initially approved for implementation by the engineer (Burns and Roe) on April 11, 1980 and Project Directive No. 75 was approved for implementation by the engineer on June 26, 1979. QCP-17 had also been approved by the engineer.

The Specification No. 2808-215 (Mechanical Equipment Installation and Piping Contract) in Section 1B, Appendix A, paragraph 1.0, states "Contractor shall submit shop drawings, calculations, procedures, reports and samples as required by the Technical Section of the specifications...." The specification Appendix D, paragraph 1.0 states that "The contractor shall submit the shop drawings and samples listed in Appendix D in addition to others required by this specification" and on page 77 of Appendix D requires the submittal of the "Quality assurance program and procedures required to implement the requirements of Division 52, Section 52A" (the QA portion of the specification)

and further requires submittal of the traceability procedure in paragraph 3.2.1.2.2 of specification section 15Q.

The WBG QA Manual, Section V, Revision 14, paragraph 5.4.5 states in part that "When review for acceptability is required by the owner, signed notification of approval is received and noted for each procedure prior to distribution for implementation.

Revisions to existing procedures are prepared, reviewed and approved in the same manner as new procedures."

The January 18, 1980 interoffice memo (No. PWS-102) appears to have revised, without owner approval, the requirements of owner approved procedures (No. PD-75, QCP-17, and QCP-24) and is an apparent item of noncompliance.
(50-397/80-08/40)

In addition, the inspector observed that WBG Quality Assurance Procedure (QAP)-7, as approved by B&R on March 26, 1980, does not appear to implement the requirements of the specification or the WBG QA Manual with regard to owner approval of contractor procedures and revisions. This item will be examined during a future inspection.
(50-397/80-08/23)

b. Allegation: Material traceability discrepancies identified by field QC inspectors had been improperly dispositioned by responsible WBG QA department personnel.

Finding: The allegation was confirmed in part.

The allegers identified certain documents and supports to the NRC which provided evidence in support of their allegation. These were examined by the NRC inspector and are summarized below.

(1) One discrepancy involving materials traceability had been identified by a contractor Engineering Quality Audit (EQA) on pipe spool SW-1048-2, classified as Quality Class 1. The preliminary punch list prepared by the EQA (titled SW-1048-2 and assigned a startup code of S/U-58) identified the lack of a heat number on a 3/4" pipe (item 3) between welds 7-1 and 8. The findings were dispositioned by WBG quality assurance on April 23, 1980 as not applicable with justification that heat numbers are not required on the item after installation. This dispositioning appeared satisfactory in this case since

the stores requisition for the 3-inch length of 3/4-inch pipe did show the heat number and this number was verified by a QC inspector. Further, these were socket welds which could have obscured the heat number on this short length of pipe.

(2) A finding of EQA preliminary punch list for spool CAS-4443-1 that no heat number existed on the 1" pipe between welds 5, 5A, 5D, and 6 with the note that a valid heat number existed on the bill of materials and stores requisition. The finding was dispositioned as not applicable on April 1, 1980 by WBG quality assurance. The inspector noted that ANSI B31.1 is the applicable code for the Control Air System and traceability is not code required even though portions of the system are quality class 1.

(3) Support No. FPC-204 (Fuel Pool Cooling) was identified to the inspectors as evidence of traceability tampering. The support is located at the 471' elevation of the reactor building. The support was examined for such evidence.

(a) The original drawing FPC-204 was approved by Burns and Roe (B/R) on August 3, 1978 and showed a support suspended from the 499' elevation floor. The inspector identified that the actual support installed was supported by a tube steel column from the 471' elevation using a configuration different than shown on the B/R approved drawing. Prior to June 1979, such field changes of design were permitted under WBG procedure WP-65. On February 20, 1979 Project Directive #75 was issued, to require that such a major change be submitted for B/R prior approval. This PD-75 was not in effect until the day of final as-built for FPC-204 (March 6, 1979). This status appears to be acceptable.

(4) The inspector compared material traceability identification codes listed in the support package materials listing and stores requests with actual codes on certain support FPC-204 items. Item 14 (stiffener plate) was originally called out on the materials list as a 3/4" plate. The 3/4" had been painted over with white typing correction ink and 1" was written over the mark out. The documentation of material for Pc. F-14 plate listed a Material Identification Code (MIC) number F-140 while the actual MIC number

scribed onto the plate was F-600. The mill certification for F-140 and F-600 were examined and appeared proper for the material installed. Item 9 (wall attachment plate) was shown by the support package documentation to have MIC number F-600 and the MIC number scribed into the installed Pc. 9 was F-218. The mill certification for F-218 appeared satisfactory and also reflected 1" plate. Other than minor documentation discrepancies, the inspector could not verify the alleged tampering with materials traceability.

(5) Below the lower of the two supported pipes was a piece of 5" x 5" x 3/8" tube steel identified on the "As-built" as Pc. 26. The inspector observed that the material heat number (HT C65655) and QC tag number (QC-29339) had been stenciled over a MIC number stamped on the piece (T-75). Both materials identification numbers were verified by review of Mill test reports to be applicable to 5" x 5" x 3/8" tube steel but MIC number T-75 was referenced to heat number 458532 by the Mill test reports. WBG personnel produced a Bill of Materials and a Stores Requisition which showed the probable reason for two traceability numbers existing on the piece. The HT C65655 apparently was added in response to a Bill of Materials note that part #26 was "cut from item #2". There was the original part #2 (Code T-75) and a replacement Part #2 (Code C65655). The part was apparently cut from the original part #2, and subsequently marked in the field, erroneously, per the drawing note. The marking right over an existing mark suggests that the personnel performing the marking did not determine that the existing MIC code (T-75) did not correlate with the heat number C65655 which they intended to scribe onto the material (i.e., They took data from the stores requisition and marked it onto the material. It could not be determined if this had occurred before or after the material had been cut and installed.)

(6) The "as-built" drawing materials list states that two pieces of 5" x 5" x 3/8" tube steel (both identified as Pc. 26) had been cut from Pc. 2, a 5" x 5" x 3/8" tube steel with MIC number T-75. One of the pieces identified as Pc. 26 was to be installed above the lower pipe. The inspector identified that the actual piece of tube steel installed above the lower pipe, as Pc. 26, was a 4" x 4" tube steel with heat number 50303 scribed thereon. That heat number was verified by a review of Mill test reports to be traceable to 4" x 4" x 3/8" tube steel. The support

had been inspected and accepted by WBG QC and "as-built" by WBG Engineering on March 6, 1979. Neither the as-built or the QC inspection documentation identified this discrepancy which appears contrary to the requirement of PD-75, paragraph 7.5, which states "The configuration of support shall be in accordance with the as-built Hanger Detail" and paragraph 10.5.2 of QCP-24 which requires the QC inspector to "Assure that all parts of the hanger are listed on the bill of materials." However, on July 23, 1980 the licensee identified that the as-built drawing contained an erroneous extra part #26, in that the top member was actually part #1 for hanger #FPC-167, which is a composite hanger with FPC-204.

The WBG QC/QA staff have documented several similar concerns in a June 30, 1980 memo to QC management, and in inspection reports IR-5919 and 5920 dated July 10, 1980. The controls to assure proper correlation of hanger material identification will be examined further during a future inspection. (50-397/80-08/24)

c. Allegation Certain heat numbers of pipe had been placed in the pipe quarantine area and significant quantities of the pipe had already been installed in plant systems. A corrective action report identifying problems with this pipe had never been issued by QA or resolved.

Finding: The allegation was confirmed but had been identified by a WPPSS/B&R surveillance to review the voided Inspection Report system in use by WBG. A report (No. M-246) pursuant to the surveillance, was issued on May 30, 1980 documenting the deficiencies identified by the voided IR's provided by the allegers to the NRC. The licensee was in process of evaluation and resolution of the findings. The licensee's corrective actions will be examined during a future inspection. (50-397/80-08/25)

The allegers supplied the inspectors with a copy of a corrective action report, dated April 5, 1980, which identified that certain heat numbers of 2" schedule 80 pipe in the quarantine area had been visually inspected and observed to be seamed pipe. Since the piping defects appeared to be identified by the IR's referenced in the CAR as longitudinal in nature, the inspector requested that WBG perform an acid etch examination of samples of heat numbers N12476, N12477, 13152 and 710449

located in the quarantine area to verify that the pipe was seamless SA-106 as had been ordered by purchase order. No items of noncompliance or deviations were identified.

The inspector requested that liquid penetrant examinations be performed on sections of 2" schedule 80 pipe with heat number N12476 installed in pipe spool number RHR-2286-5 and heat number N12477 installed in pipe spool number RHR-2018-1 to ascertain if the installed pipe had rejectable laps or seams, the like of which had been observed on these heat numbers and documented in previous inspection reports. A total of six pipe sections were examined. No rejectable defects were identified by these examinations. The inspector observed that one 4' section of 2" pipe between welds 9 and 10 of spool number RHR-2018-1 did not currently have a heat number or identification marking on the pipe. A review of the quality records associated with this pipe indicate the 4' section of pipe was cut from a 20' length of pipe (heat No. N12477) withdrawn from shop stores on December 20, 1977. Installation was observed by an inspector in 1978. The traceability information may have been subsequently removed (for reasons unknown) as evidenced by the grinding marks or a small area of the pipe. The licensee is examining this installation with the view of taking appropriate corrective action should it not conform to ASME Code requirement for material traceability.
(50-397/80-08/26)

d. Allegation: Two inch schedule 80 pipe, heat number 13152, is in the quarantine area with no documentation of why the pipe was quarantined and several thousand feet of this heat number were issued when only a few thousand feet were received.

Finding: The allegation was not substantiated. One section of the pipe was placed in the quarantine area because it had been bent; this fact is documented by WBG Receiving Inspection Report number 18912. The bent piece was subsequently removed and the remaining acceptable pipe was removed from quarantine (see receiving inspection report 18912A).

Review of materials documentation established that 3280' of pipe with this heat number had been received and that 2598' had been issued.

No items of noncompliance or deviations were identified.

e. Allegation: Inspection Report No. 215-IR-5153, documenting a lack of material traceability for two Zurn Model Z-615 drain fittings, was (1) improperly closed out, (2) no NCR was written and (3) the owner was not notified of the discrepant condition.

Finding: The allegation was not substantiated. The inspector found that parts (1) and (2) to the allegation were true but of no safety significance. Part (3) to the above allegation was not true. Detailed findings are presented below.

The allegers complained that the above inspection report had been improperly closed out by the WBG QA Manager, who signed as the inspector on March 26, 1980. Paragraph 4.11.1 of QAP-5 requires that "When signing an inspection report to certify acceptably completed corrective action, the inspector shall reference documentation...as required to audit and collaborate acceptable closure." There does not appear to be any procedural requirement precluding the QA Manager from verifying completion of acceptably completed corrective action.

The IR disposition assigned was to "accept-as-is" based upon PED-215-B-2835. The Engineer (B/R) had been verbally notified of the IR identified discrepancy, and on March 25, 1980 the PED was issued by the engineer with the assigned disposition that a letter of compliance from the vendor shall satisfy quality requirements for this instance only. Based upon the assigned PED disposition, the WBG QA Manager had closed the IR and placed the IR and the PED disposition into a "hold" area in the QA vault, presumably awaiting receipt of the vendor's letter of compliance. The letter of compliance had not yet been received by WBG. It is apparent that the IR was closed prior to the completion of accepted corrective action; however, WBG had placed the IR in a hold area awaiting the necessary document to complete the corrective action. Therefore, even though the requirements of QAP-5, paragraph 4.11.1, had not been complied with pro-forma, the inspector does not consider this a matter of substance.

The IR disposition contained a note by the WBG QA Manager that no NCR was required. QAP-5, paragraph 4.12, refers to the contract specification 2808-215, Section 1B, Appendix C for criteria necessary to cause an NCR to be generated. Attachment 5.1 (page 4a) of Appendix C of the referenced specification Appendix C

requires that an NCR be generated if the discrepant condition is classified as quality class 1 and the proposed resolution is "accept-as-is." The IR referenced PED had been properly approved by B/R Engineering and although QA did not appear to have reviewed the PED, as is required for NCR's, the inspector does not consider this to be a matter of substance.

f. Allegation: Construction convenience steel without proper material traceability was removed from the convenience steel storage yard used in pipe supports and stamped, by the crafts, with heat numbers used by the support contractor. (Note: The allegers were unable to provide specifics for this allegation other than the suggestion that supports located at the 548' level of the reactor building should be examined for evidence of materials traceability tampering).

Finding: The allegation was not substantiated. The inspector discussed the implementation of the WBG traceability procedures with various personnel responsible for material receipt, storage, and use. In addition, controls implemented for the storage and use of convenience steel were examined.

The convenience steel was located in a fenced boundary with a locked gate with the key kept under the control of material requisition personnel. Discussions with WBG personnel indicated that some confusion existed over controls applied to convenience steel. For example, some believed that the material was required to be marked with yellow paint prior to being placed in the storage area while others believed that the material was required to be so marked upon removal from the area. Generally, most personnel believed that the yellow marking was required; however, in actuality no procedural requirements existed for the control, issue or marking of convenience steel.

The inspector's examination of material marking practices and implements indicated that WBG uses scribing and stamping (1/4" and 3/8" letters) to effect the transfer of traceability information. The support supplier used 1/4" stamped letters and, therefore, it appeared to be impossible to verify the alleged practice since no unique characteristic could be attributed to the stamps used by the support supplier or WBG.

WBG has instituted the practice of dismantling supports in the storage area supplied by the support vendor, when a support redesign was required which rendered the supplied support unusable. Discussions with the responsible crafts personnel indicated that when a support was being dismantled, a QC inspector was to be available to assure the proper transfer of traceability codes. After dismantling the material stored on dunnage inside the controlled storage area, signs attached indicate that rows of stored material are to contain Class 1 material only. The inspector briefly examined selected materials in the dismantled support area, marked for storage of Class 1 materials only, to verify that materials contained adequate traceability markings and observed that two pieces of 3" angle shaped steel (each about 5' long) had no heat number or other traceability markings and one piece of 2" angle steel had an illegible QC tag affixed. The material had not been used and WBG procedures require QC verification of traceability on stores requisition documents. About 15 supports in the 548' level of the reactor building were examined for evidence of materials traceability tampering. It was observed that all material was either scribed or stamped with traceability identification. A sample of the traceability documentation referenced by the markings did not disclose any evidence of traceability tampering. No items of noncompliance or deviations were identified.

g. Allegation: In pipe spool RHR-667-8.12, a pipe with heat No. L-24897 painted on it was installed between welds 5A & 5G. This same pipe also had the word "scrap" painted on it.

Finding: The allegation is true but this fact had already been identified by WBG QC and documented. The fact that the pipe had "scrap" painted on it was not a finding of the QC inspector. The resolution of this apparent discrepant condition in traceability marking and the apparently inconsistent fact that a pipe marked "scrap" was installed in the RHR system will be examined during a future inspection. (50-397/80-08/27)

h. Allegation: Heat No. HA 0001 was used when traceability was lost. Possibly may have more of this pipe than purchased. It is either 3/4" or 1" schedule 160 pipe.

Finding: Parts of the allegation were confirmed, although falsification of heat numbers was not.

A review of the WBG heat number log disclosed that for heat number HA 0001, 4421' of 3/4" seamless pipe, schedule 160 was

received on site. Of this amount 533' was classified as ASME III Class I and 3888' as ASME III Class II. Examination of the warehouse stores requisition records indicated that 143' of this heat of Class I pipe was issued to the field for installation. However, the laydown yard inventory records indicated that only 73' was issued with 460' still in their possession. The inspector confirmed through a survey of the yard that approximately 460' of the material in question was still in the yard. Therefore, the other 70' of the material shown by stores requisition to have been issued may be in question. This item was considered unresolved pending the licensee's examination of the material in question. (50-397/80-08/28)

i. Concern: Handling of inspection reports (IRs) and stores requisitions.

Finding: The inspector investigated the circumstances surrounding a number of WBG Inspection Reports and stores requisitions, other than those detailed above, involving questions of material traceability. In these instances, the alleger's concerns did not appear to be founded in fact and their concerns were resolved by investigation of the details and facts.

No other items of noncompliance or deviations were identified in the area of material traceability.

8. Design of As-Built Supports

a. Allegation: Welding performed on support No. RRC-3 did not conform to design detailed welds accepted by WBG Engineering.

Finding: The allegation was substantiated. The inspector examined support RRC-3 as installed, Drawing RRC-3, Rev. 0, and the final "as-built" drawing. The drawing RRC-3, Rev. 0, was approved for fabrication by B&R on March 11, 1978. The final "as-built" drawing of RRC-3 was completed by WPG Engineering on June 8, 1979. The welding details of Revision 0 did not appear to conform with the "as-built" weld details in that a 1/4" fillet weld (No. 4) was made perpendicular to the axis of an existing structural steel member, and fully across the member, a 14" x 184" wide flange beam. The welding had been performed in November 1978. However, the drawing had a partially visible, partly erased, designation of this weld. The WBG

field engineer apparently concluded that this weld was required. The changed welding detail was dated January 24, 1980 on the as-built, after the final as-built was completed and accepted by WBG Engineering and QC, namely June 8, 1979. The Engineering Quality Audit of October 12, 1979 identified that weld 4 of drawing RRC-3, Rev. 0, as approved by B&R, did not exist in the field but did not appear to identify the existence of the weld transverse to the beam axis. On January 24, 1980 a WBG Engineer, without B&R approval, modified the weld details of the "as-built" drawing and then provided the resolution accept-as-is to the EQA inspector's finding based on the fact that the existing welding conformed to the as-built drawing. However, the as-built drawing, completed June 8, 1979, did not identify the modified welding details as installed on the support. No calculations nor B/R approval of the deleted weld (No. 4) were available.

The Specification 2808-215, Section 15Q, page 15Q-16 requires that "Welding perpendicular to the axis of members shall be subject to approval of the owner." WBG had not obtained the required owner approval for the above welding and, furthermore, when on January 24, 1980, the welding detail was changed to agree with the as-built condition, no action appeared to have been taken to determine why the previously approved as-built drawing did not reflect the as-welded condition or why the welding did not conform with drawing RRC-3, Rev. 0, as approved by B&R. This is an apparent item of noncompliance.
(50-397/80-08/29)

A review of the documentation package for support RRC-3 indicated that the Engineering Quality Audit had been performed on this support. The findings evidently consisted of two pages (six findings) however only page 2, containing findings 5 and 6, was in the package. Page 1 was missing from the package. This resolution of item will be examined during a future inspection.
(50-397/80-08/30)

It was also observed that the support documentation package contained only the as-built drawing and not the B&R approved original Rev. 0 drawing and therefore it would appear that the QC inspectors inspect for as-built drawing conformance and are not accorded the opportunity to evaluate the installed condition to approved B&R drawings. The licensee was asked to consider this aspect of the apparent problem.

In the course of the investigation, the inspectors received a number of complaints from WBG personnel regarding the time taken by B/R and WPPSS in the review of WBG submitted documents. Generally, these complaints expressed concern that WBG submitted requests for information (RFIs), procedures and revisions, and other documents appeared to take an excessive amount of time for the owner/engineer review or approval. These concerns appeared to be founded in substance, examples of which were provided the licensee for consideration.

b. Concern: Calculations were not performed as required for support modifications.

Finding: WBG Project Directive No. 75, paragraph 6.3.1 states that "Calculations required for minor re-design shall be limited to: those cases involving any changes in the sizes of members, welds or configurations, which will result in increasing the stress in members or connections..."

Support MSLC-21: The "as-built" drawing for the support modified the originally approved detail in such a way that the originally specified 1/4" fillet, all around, for attaching Pc. 2 to Pc. 4, was changed to a 1/4" fillet only on the outside of each Pc. 2 flange and a full slot weld attaching the web of Pc. 2 to the flange of Pc. 4. It appears that the deletion of the fillet weld on the inside flanges of Pc. 2 would cause an increase in the stress in the connection. Calculations had not been prepared to justify the change and the changed welding details were not initialed or dated. This is an apparent item of noncompliance with the above requirement. (50-397/80-08/29)

WBG Project Directive No. 75, paragraph 6.2.1, specifies that redesign is of the major category if "Hanger assembly cannot be installed as designed and redesign will result in a complete new configuration..." Paragraph 6.2.2 prescribes that "All cases of major redesign as defined above shall be transmitted to the A/E on a request for information (RFI) for redesign by him."

Support MS-333: Support MS-333, Rev. 0, was approved for fabrication by the A/E on August 1, 1978. The support was redesigned by WBG on November 30, 1978 with a totally different configuration due to an existing interference. As previously noted (paragraph 7.b(3)), compliance with paragraph 6.2.2,

above was not required at that time of this design change.

c. Allegation: As-built hanger drawings do not reflect installed condition.

Finding: This allegation was substantiated. The inspector visually inspected two installed hangers along with the as-built drawings for hardware numbers RHR-326 and SGT-2. The following discrepancies were observed.

(1) As-built hanger drawing RHR-326 specified square groove welding for welding pipe to web, whereas the actual weld joint was "cap" welded.

(2) As-built hanger drawing SGT-2 specified, on May 1, 1980, 1/4" fillet welds for welding hanger to embeds, whereas the actual weld joints were flare bevel welds. In addition, the punchlist noted that the flare bevel welds were undersized. On May 8, 1980 the final marked-up as-built drawing shows that the 1/4" fillet weld requirement was replaced by the 4" long flare bevel welds. The undersized flare bevel welds identified in the punchlist were never dispositioned. This was subsequently determined to be acceptable as specified by B/R Project Engineering Directive.

PD No. 75 "Hanger Engineering Standard" paragraph 6.3.1 states that "Calculations required for minor re-design shall be limited to those cases involving any change in sizes of member, welds or configuration, which will result in increasing the stress in members or connections or will increase the load on anchor bolts." Contrary to this requirement, hanger number RHR-326 underwent 2 design changes specifying a weld of lower grade than originally specified, with no calculations to justify downgrading of the weld.

This is an apparent item of noncompliance. (50-397/80-08/29)

d. Allegation: As-built support details do not reflect oversize support fillet welds.

Finding: The allegation was found to be true. The inspector found that oversize fillet welds existed attaching support

steel to base plates or other support steel and the support details had not been changed to reflect those oversize welds. This practice was discussed with the IE:HQ welding engineer who indicated that the evidence of oversize fillet welds should not cause deleterious effects on the support load bearing capability.

The Specification 2808-215, Section 17A, addresses oversize fillet welds as applicable to piping and not supports. However, WBG QC personnel had identified the existence of oversize support steel fillet welds and, by RFI-6378-XX-17A and 6095-XX-17A (welding quality requirements), requested that B/R delete the section 17A requirements as regards oversize support fillet welds, apparently assuming that section 17A of the specification applied to supports. Discussion with the WBG Project Engineer indicated that Section 17A did not apply to supports, but only to pressure boundary components and piping. Other discussions with WBG QC personnel indicated some confusion as to which of specification sections 17A, C or D applied to component supports.

Some WBG personnel indicated their belief that none of the specifications in sections 17 applied to supports while others believed section 17D did apply to supports. The inspector could not determine if B/R had ever been advised of the apparent WBG confusion and, correspondingly, a B/R position statement to WBG regarding the applicability of section 17A, C or D to support welding could not be located. The inspector observed that the WBG procedure QAP-9 (In-Process and Final Visual Weld Inspection) did not appear to address the specification requirements with regard to oversize fillet welds. These items will be examined during a future inspection.
(50-397/80-08/31)

9. Cleanliness and Hydrostatic Testing

a. Allegation: Pipe is in the laydown area for four years and is installed without cleaning.

Finding: The allegation was not substantiated. The length of time pipe is kept in a laydown area is not restricted by any applicable codes or standards. Inspectors conducting interviews of quality control inspectors and field engineering personnel

were consistently informed by the interviewed personnel that they knew of no instances where pipe was installed without cleaning. The cleanliness of pipe in the laydown area was examined. It was verified that the internal cleanliness of the pipe in the laydown area was generally poor. Approximately one half of the piping in the laydown area has the cleanliness caps made up from overlapped strips of plastic tape. These tape caps are in various degrees of deterioration, with soil evident in the pipes with badly deteriorated tape caps. Two pipe spools with normal molded plastic cleanliness caps were examined.

One of the spools was clean, the other had approximately 1/4 cup of soil and air arc slag in it. The inspector concluded that cleanliness controls in the laydown area were not being rigorously adhered to.

The inspector examined installed piping cleanliness. Three piping runs were examined for internal cleanliness by removing the pipe end cleanliness caps. Two of the runs were satisfactory. The third piping run was RWCU-812-3.7 which was being reworked to replace orifice flanges with a venturi in accordance with PED 215-M-5161. The orifice flanges had been cut out by air arcing and the pipe ends sealed. Inspection of the internals of the pipe revealed not only the expected air arcing slag but some debris. The debris consisted of flapper wheel shreds and grinding particles. There was an evenly distributed layer of about 1/4 cup of debris per 12" length of pipe. The debris was visible for about six feet in the horizontal run of piping and continued around the first pipe bend. Since the edges or I.D. of the air arced pipe had not been worked with a flapper wheel or grinder, it was possible that the debris could have been there from the original construction and was not introduced from the current modification work. The presence of the debris indicates that there is doubt as to whether the Grade B clean systems meet the cleanliness definitions of ANSI N 45.2.1.

This item will be examined during future inspections pending the licensee's examination of the general subject. (50-397/80-08/32)

b. Allegation: No system flush is planned before hydro. There is all kinds of garbage in the lines.

Finding: The allegation was confirmed in part. The licensee's procedures and practice allow hydrostatic tests to be performed

prior to system flushes. However, this practice is not prohibited by any of the applicable codes and standards. The internal cleanliness of the installed piping was determined as described previously and may not be in accordance with the cleanliness standards of ANSI N.45.2.1.

Additionally, the inspector examined radiograph review records from June 1979 to December 1979. These records are basically a log of what was reviewed and the results. There were approximately 500 radiographs logged during this period. Of these, the inspector determined 16 of the radiographs were rejected because of "dirt", "material" or "trash" in the pipe. By discussion with the Level III examiner, it was determined that material was generally weld rod stubs, a gravel-like appearing material, and in one case a tape measure. The inspector examined four of the examples for evidence of quality control inspection of cleanliness during weld joint fitup. In all four cases, the joints were in locations where material could have entered the pipe from other openings after proper cleanliness verification of the joint.

The as-fabricated cleanliness of the piping systems may be in question. The adequacy of the flush program to remove the type of debris indicated by the radiographs will be subsequently evaluated during flushing operations.
(50-397/80-08/33)

c. Allegation: A nameplate is trapped in a line as described in Inspection Report 215-IR-5438.

Finding: The allegation was confirmed but is not an item of concern.

The IR reports an ASME nameplate was dropped in a drain. The disposition of the IR addressed replacing the nameplate but did not address actions to clear the drain. Discussions with the mechanic foreman and review of the daily time report revealed the drain line had been "snaked" in an attempt to retrieve the nameplate and had been high pressure and low pressure flushed to its terminus (the Chemical Waste Tank) in an effort to retrieve the nameplate. The nameplate was not retrieved but there was no evidence of flow blockage in the embedded drain lines. Since the drain line is quality class "G", the inspector has no further question.

In the review of this item, it was noted that under reinspection notes that the QC inspector entered a statement that Item (5), (obtain a new nameplate), was "not required". This entry was contrary to the written disposition by the engineer and no explanation was provided. The explanation, per the inspector, was based on a telephone call from the engineer saying the nameplate was not required. Per the engineer, the nameplate installation would be covered during the certification for fabrication on the NPP-1 form as that section of piping was closed out. This item is presented for the licensee's consideration and possible followup since the record shows an incomplete disposition instruction and quality control personnel superceding engineering instructions.

d. Allegation Improper hydrostatic tests are being conducted. It is necessary to keep pumps on because pump fittings leak so much.

Finding: The allegations were confirmed but are not of technical concern. The inspector interviewed quality control personnel and test engineering personnel and determined that hydrostatic tests are sometimes conducted with slight leaks at the test pump fittings. These leaks do not preclude reaching and holding hydrostatic test pressure for the prescribed amount of time and the leaks are not allowed to impinge on the pipe being inspected.

The ASME B&PV Code 1971 Edition Section III Paragraph NB-6213 states that hydrostatic test equipment shall be examined before pressure is applied to ensure it is tight. However, this is an interpretable requirement and is taken to mean sufficiently tight to safely conduct the test.

The inspector had no further questions on this item.

e. Allegation WBG improperly plans to omit TSP (tri-sodium phosphate) wash of stainless steel systems.

Finding: The allegation was not substantiated. Project Engineering Directive #215-M-0364 revised specification #215-52B Table 3 to confine TSP inhibit treatment to piping and equipment supplied by GE. It also provided that such treatment may be accomplished in conjunction with cleaning or flushing or during fill for hydrostatic testing. Since such flush/hydrotest will be performed by WPPSS startup, WBG management planned on no TSP treatments. The WPPSS startup manager stated that GE

equipment specification #21A8626 includes requirements for system flush with TSP, but that this is not in fact the current industry practice. He stated that GE would provide a document that would recognize deletion of the TSP requirement. There appears to be no PSAR commitment nor regulatory requirement specific to this matter. The inspector had no more questions on this item.

10. Allegations Related to Other Activities

a. Allegation: No compaction reports on buried service water piping.

Finding: This allegation was true; however, this is not a deficiency because relative density tests are performed by area and as such are not directly traceable to any particular line.

Work Procedure No. 5, Revision 4.0, "Backfill and Compaction" in paragraph 3.2.4.9 states that "Compaction of earth around pipes specifically called out as Quality Class I shall be a minimum of 75% relative density and an average relative density for three consecutive tests of not less than 85%." Discussions with licensee personnel and a review of compaction reports in the general area of the buried service water pipe confirmed that most relative density tests were running over 100% for all class of pipe.

b. Allegation: Main air intake into control room flanges may not be properly insulated.

Finding: The allegation was not substantiated.

The meggering test results for the insulating flanges for the air intake line (isometric package No. WOA-607-1.2) were examined and it appeared that the flanges were properly insulated.

c. Allegation: A 4:1 torque multiplier was used instead of a 2:1 for bolting. There are no 2:1 torque multipliers on site. All torquing is done with 4:1 or 10:1 torque multipliers.

Finding: The allegation was confirmed; however, these deficiencies had previously been identified by the licensee and corrective action was in progress.

The inspector determined from a review of documentation and discussions with licensee personnel that, prior to the overtorquing

incident, the contractor believed that all of his torque multipliers were 10:1 units. Subsequent investigation by the licensee determined that a total of four 4:1 torque multipliers had been onsite for an unknown amount of time and had never been in the contractor's shop for calibration. Two of these units had been received onsite on October 3, 1977 and the other two on December 8, 1978. Also, Surveillance Report No. M-230 on April 21, 1980 indicated that the contractor did not have a control system for differentiating between issuance of 4:1 and 10:1 torque multipliers prior to April 1980 and records were not maintained of their usage in the field. This made it difficult to discover if these uncontrolled and uncalibrated torque multipliers were ever used on any other equipment installations. However, except for retorquing of Velan valves in the pump house, the inspector found that for those Class I installations where the use of a torque multiplier was required, a calibrated torque wrench or calibrated 10:1 torque multiplier was used. According to NCR No. 5163 the retorquing of Pumphouse 1A and 1B Velan valve bolts had been accomplished by WBG personnel under the direction of the Velan valve representative. The licensee was unable to answer whether WBG equipment was used in the retorquing operation but indicated that the vendor would be contacted to provide any information he had on the subject. This item is unresolved pending review of this documentation.
(50-397/80-08/34)

d. Allegation: There is a flashlight in the reactor pressure vessel drain.

Finding: The allegation was not substantiated. However, a flashlight was lost in a floor drain in the reactor vessel cavity area on September 14, 1979, and it apparently was never removed. Its existence is documented on GE internal memorandum dated September 19, 1979, and now has been documented on WBG report #215-IR-5789. Plans for its removal are in progress. The drain line is non-safety related, quality Class II, ASME III, Class 3. The inspector has no further questions on this item.

e. Allegation: Improper action has been taken to correct holddown clamp shims and overtorqued bolts of the turbine building crane.

Finding: The allegation was not substantiated. Project engineering directive #215-C5-1692 has been issued October 25, 1979 to realign crane rails to prevent excessive wear on rails and

wheels. Replacement of shims is required. WBG inspection report #4581 dated November 8, 1979 and nonconformance report #5021 dated November 9, 1979 identify that bolts have been overtorqued. The nonconformance has been evaluated by Burns and Roe and the licensee welding engineering group representative and bolt retorquing prescribed. The specified corrective actions remain to be completed. The nonconformance report will involve QC verification in accordance with the QA program. The technical acceptance of the overtorqued bolts appears to comply with AISC guidelines.

No items of noncompliance or deviations with regulatory requirements were identified.

f. Allegation: Scaffolding is wedged between piping and the sacrificial shield structure at elevation 544 in an unacceptable manner.

Finding: The allegation was not substantiated. No specific location was identified to NRC. At some points at elevation 544 wooden scaffolds/platforms have been erected around the sacrificial shield wall to facilitate work. Some such platforms fit tightly against piping, and will need to be removed before system testing/operation. No areas were identified where scaffold/platforms were currently unacceptable. The inspector had no further questions on this item.

g. Allegation: It is uncertain whether a staging ladder which was tack welded to the inner diameter of a vertical run of Main Steam pipe was removed. It was further alleged that the controls for temporary attachment welds were not applied. The pipe was reported to be 36" pipe at the 471' elevation in the turbine generator building. The pipe was MS 529 or 530 series and could be located standing in front of a 6 foot concrete pad looking south at the condenser. The pipe was a riser between two elbows and is the first pipe on the right. There are four lines total.

Finding: The allegation was partially confirmed. The inspector determined the pipe was MS 528-7.10 between welds 5 & 6. This is the first pipe on the right facing west toward the condenser. The inspector examined the pipe installation records for all four similar pipe spools for temporary attachment weld records for a ladder. No such records were found in the document packages. The pipe spools in question are 30" pipe vs. 36"

pipe. The document package for the suspect pipe spool MS-528-7.10 was examined. Welds 5 & 6 were made on October 17, 1977 and November 2, 1977 respectively. Subsequent to those dates, the records do not indicate any repairs which required weld joint cutout. The vertical pipe spool has a 90° elbow on each end which would preclude the installation of a ladder after the 1977 installation.

Review of the document package for MS-528-7.10 shows that in 1977 the filing of temporary attachment weld records was inconsistent. The allegation in part indicates the performance of controls was also inconsistent. The document package shows a liquid penetrant record for weld #6 after fitup lug removal but there is no record of the welds having been made (with proper material and procedure). Similarly, there is an inspection report IR 2633 for gouges in the pipe from fitup dog removal. There is no welding documentation for the temporary attachment weld and no liquid penetrant record.

This matter is unresolved pending the licensee's examination of piping in question.
(50-397/80-08/35)

11. Documentation

a. Allegations:

(1) Documents (NF-6 and NF-69 forms) have information changed without explanation or initials/dates.

(2) Records contain inconsistent dates for welding filler material issuance and actual welding.

(3) Welder identification is missing on some weld history records (NF-6 form).

(4) Records indicate one case where more rod was turned in than was issued and one case where only one pound of rod was used to make a weld.

(5) Records do not document welding activities for each day welding was performed.

(6) Major problems exist with missing and incomplete documentation packaged.

Finding: The allegations were not substantiated in that these conditions had been previously identified by the established QA program and were being properly handled. However, during the investigation of the allegations, several additional concerns were identified, these were: lack of and incomplete document checksheets; incomplete records of training for document review personnel; improperly completed document checklists; lack of thoroughness in document reviews; and failure to accomplish required magnetic particle testing for two welds.

Several of the persons interviewed during the investigation expressed concern that QC punch inspectors were no longer performing document reviews since reviews were now being performed by less qualified QC clerks, and that the controlling procedures for document review had been cancelled, and finally that no action had been taken on inspection reports written to document records irregulatories.

The allegations were investigated by examining the instructions and procedures applied to the review of quality documents, handling of review findings, training and qualification of document reviewers, interviews with cognizant personnel, and an independent review of selected quality documents.

The examination of procedures and practices applied to document reviews revealed that no procedures had been developed to control the final review of structural record packages although such packages had been reviewed, and turned over to the licensee (e.g. Structural Steel Inside Containment, Elevation 565 ft., Turnover Package, certified complete December 28, 1979).

It was also found that equipment document packages were being reviewed with incomplete checklists (e.g. no checklist item to examine weld records associated with equipment installation nor is there a comprehensive list which tells the document reviewer which documents are required to be in specific equipment documentation packages). The failure to provide a checklist for the review of completed document packages is contrary to the requirements of the contractor's "Field Quality Assurance Manual". Revision 10, paragraph 17.2 which states, in part "As documents are received, they shall be checked for completeness and acceptability...a Document Checklist shall be prepared...". This is an apparent item of noncompliance.
(50-397/80-08/36)

A comparison of the procedure currently used to review piping and hanger document packages (Work Procedure No. WP-140, Revision 2, entitled "Work Package Completion and System Turnover") and previous instructions (WP-140, Revision 1, Project Directive No. 71, and Quality Assurance Instruction No. 701) showed that the latest checklist was significantly abbreviated from former versions. Contractor representatives explained that the checklist had been abbreviated in conjunction with a revision to the parent instruction in an effort to improve the document review process. It was found, however, that the new checklist lacked a check item to verify that dates on the records follow a logical sequence.

The training and qualification of document review personnel consists of self-study or lecture training on contractor procedures Nos. MISC-18, QAP-6, WP-80, WP-86, WP-115, WP-140, WP-149, and WP-153, and on-the-job training with experienced document reviewers. A review of the training records for nine document reviewers revealed two instances where training records did not indicate completion of required training although these individuals were currently performing document reviews. One individual hired Feburary 20, 1980 had not been trained for WP-115 and one individual hired March 7, 1980 had not been trained for any of the procedures. Contractor representatives explained that these two individuals commenced the self-study of the procedures but had not yet submitted the completed record of training, and that these relatively new hires were under the close supervision of senior personnel.

Adverse findings resulting from document reviews are documented on Package Completion Lists (PCL's) and may, after further review, be written on Inspection Reports, or Nonconformance Reports. This status of approximately twenty Inspection Reports resulting from document reviews performed in April and June 1980 was reviewed with cognizant QA and engineering personnel. The IR's examined included many of the same subjects expressed as concerns by the allegers. None of these Inspection Reports had been voided and appropriate actions had been planned.

Interviews with personnel involved in the review of document packages and resolution of findings did not identify any additional items related to the document review process.

Ten completed quality documentation packages were examined. These were: pipe support package EDR-390, EDR-391, EDR-392,

RHR-186, RHR-192, RHR-199, and FDR-693, pipe package LPCS-4472-1, structural steel package for Inside Containment, elevation 565 ft., and pump LPCS-P-2. The review revealed the following:

EDR-390 -- The document checklist had not been filled out and the NIX Testing magnetic particle test report for FW 1, 72 hr. after cooldown, No. 14610 did not indicate inspection results. It appears that the "X", indicating acceptance, had been placed in the wrong column. An examination of other NIX records indicates that this MT had been satisfactorily completed.

FDR-693 -- The checklist had been checked in the wrong columns in several locations.

LPCS-4472-1 -- The checklist had been checked in the wrong columns in several locations.

LPCS-P-2 -- The document review was signed off on December 10, 1979. However, there are records in the package indicating that the pump was subsequently unbolted, realigned, and rebolted during the period of December 11-13, 1979. No final record package review was performed after this date as required by the contractor's Field Quality Assurance Manual, Revision 10, paragraph 17.2.3 which states, "The completed document package shall be delivered to the Project Quality Assurance Manager or his designee for review and acceptance. He will indicate his acceptance by signing the work package." This is an apparent item of noncompliance.
(50-397/80-08/37)

EDR-392 -- No deficiencies were identified with the clerks review of the EDR-392 document package. However, it was found that the contractors field engineers had marked the inspection blocks for "72 hr. VT & MT" on welds 5-1 and 6-1, from NF6B, as not required. These welds attach the hanger to the sacrificial shield wall and should have been visually examined and magnetic particle tested 72 hours after welding cooldown as required by Contractor work procedure No. 84, paragraph 8.2.

This is an apparent item of noncompliance.
(50-397/80-08/38)

Based on the above noted discrepancies, the licensee's actions to assure final document reviews are properly accomplished will be examined during a subsequent inspection.
(50-397/80-08/39)

b. Allegation: Twenty package completion lists have disappeared from quality record packages.

Finding: The allegation was not substantiated. The disappearance of Package Completion Lists (PCL's) was reviewed with cognizant contractor and licensee personnel. Based on the review, it was concluded that only six PCL's have been lost in the last year. The PCL is a listing of discrepancies found during document reviews. When a PCL is lost, the review is reperformed so there is no loss in quality traceability.

c. Allegation: Authorized Nuclear Inspector initials appear to be different for the same individual as indicated by the "G" on the NF-6 forms for SW-295-23.32 welds 9, 8A, 8, 7A, 7 6A, 6 5A, 5, 4A, 10, 4 3A, 3 2A, 2, and 1A.

Finding: The allegation was not substantiated. The ANI who's initials had been in question was no longer on site but had recently returned to the site. He reportedly reviewed the questionable initials and stated that they were his. The NRC inspector reviewed ANI log books and verified that the ANI had been on site during the period in question. The ANI was contacted telephonically. He reiterated to the NRC Inspector that he had examined the questionable records and was sure that all "G" initials on the documents were his.

d. Allegation: Quality Records were falsified. A comparison of the 1979 photo copies of WBG pipe and hanger quality records with those same records today will show that falsification have occurred since that time.

Finding: The allegation was not substantiated. Approximately 50 of the 1979 photocopied records were compared with the original. While there were instances where information on the records had been added, changed, or deleted in each case, the correction had been initialed and dated as required by the contractor's procedure No. WP-153, entitled "Changes to Quality Related Records/Documentation." The inspector had no further questiond on this item.

e. Allegation: The inspector's stamp issued on October 2, 1978 was next to an item dated May 6, 1976 on weld rod issued record #112.

Finding: The allegation was not substantiated. Reinterview with the alleger on this item indicated no concern or problems existed. The alleger indicated that there was no improper action in this case. The stamp was applied to a change, not the original entry. The inspector had no more questions on this item.

f. Allegation: Support No. SW-112 was documented as completely installed and inspected but the support did not exist in the field.

Finding: The allegation was not substantiated. Support SW-112 had been previously installed and accepted but had been removed due to interference. The documentation of removal complied with the requirements of Project Directive No. 75, paragraph 7.9. No items of noncompliance or deviations were identified.

g. Allegation: LPCS-63 hanger package was lost.

Finding: The allegation was confirmed; however, the deficiency had been previously identified by the licensee and corrective action was in progress.

Nonconformance Report No. 5280, which addresses the missing documents, states that a new package has been prepared from file documents with the exception of the weld records. These weld records, the NCR recommends can be created through reinspection of the hanger. The NCR is currently in the Burns and Roe review cycle for approval on the recommended disposition.

h. Allegation: Contract 215 Engineering Quality Analysis review of completed hanger documentation packages has been reduced from 100% to 20% samples even though the package rejection rate is 80% - 90%.

Finding: The allegation was confirmed. The inspector discussed the allegation with WPPSS/B&R QA personnel and determined that the 100% EQA audit of hanger documentation packages was initiated in July 1978 in response to an NRC repeat Notice of Violation. The commitment in the August 31, 1978 response to the Notice of Violation was to continue the 100% second line inspection until a confidence level in the first line inspection was reached. The EQA group discussed here consists of Contract 215 personnel as opposed to WPPSS B/R QA personnel. Licensee

quality assurance personnel stated the EQA review of hanger documentation was dropped to a 20% sample approximately July 1979 because of the lack of significant findings by the EQA group.

The inspector examined the WPPSS/B&R Documentation QA group processing of hanger documentation packages for final acceptance.

Thirty two hanger documentation packages which had been approved by the EQA group as complete were reviewed by the WPPSS/B&R QA engineer in 1980. Each package had been returned to Contract 215 with significant discrepancies such as no QC signoff on weld record, welds not shown on the as-built drawing and NDE reports missing. Based on the above, it appeared questionable to the inspector that an adequate confidence level in the first line inspection or the EQA second line inspection had indeed been reached.

The inspector determined that essentially all of the vendor certificates of compliance (COC's) are being held in the contact 215 vaults. The COC's have unresolved comments attached. The comments were made by WPPSS QA reviewing personnel approximately one year ago. WPPSS QA personnel stated no action was being taken at that time to resolve the comments.

The licensee's actions to resolve these documentation problems and adhere to the previous commitment to the Commission will be examined during a subsequent inspection. (50-397/80-08/39)

i. Allegation: A WPPSS audit of hanger documentation about one month ago discovered items missing from packages. It was inferred that deficient documents had been "purged" from the packages.

Finding: The inspector interviewed the WPPSS/B&R Lead QA personnel in the audit group surveillance group and the documentation group. No such instance was recalled by any of the parties. The inspector had no further questions. Several documentation problems have been previously addressed in this report.

j. Allegation: The Service Water (SW) underground piping traveler shows that engineers had walked down the system. This couldn't have been done since it was underground (buried).

Finding: This allegation was not substantiated. The "Traceable Piping Work Package Traveler" for ISO No. SW-250-4.7 shows WBG QC inspector sign-off on final and turnover punch indicating completion of walk down inspection. However, the QC inspector made a note on the traveler indicating that the pipe was buried and could not be visually inspected.

k. Allegation: Structural steel weld repair records are to some degree not identifiable nor retreivable, for work at containment structure elevation 524. In many cases:

(1) Filler metal cannot be identifed.

(2) Magnetic particle examination completion cannot be ascertained.

(3) Weld repair records cannot be related to physical welds.

(4) Welders on specific weld segments cannot be identified.

(5) Size and type of repairs cannot be ascertained.

Finding: Substantiated in part. The documentation package for elevation 524' steel repairs was reviewed by Burns and Roe on a preliminary basis prior to preparation of a turnover procedure. Due to recognized defects, the package was returned to WBG for re-review. That re-review by WBG is in progress while Burns and Roe is developing procedures for review/acceptance of documentation packages from WBG. The WBG review has been in-progress during April/June 1980 and has confirmed existence of the alleged deficiencies. Evaluation under the WBG QA program is pending. The following WBG findings relate to the allegations:

(1) Of 150 weld records, 50% contained discrepancies in the date of welding as related to the date the welder indicates he obtained the weld materials from the issuing station. In some cases, the date shown for obtaining the weld material is after the indicated weld completion, date (e.g. weld #7-4.1 R1 completed January 5, 1979, material obtained January 17, 1979).

(2) Hold point sign-off or backup NIX reports are missing for magnetic particle inspections of many repairs; (e.g. weld #1-1.1.3 R1, #5-8.2 R1, #6-3.4 R1, #12.9.3, #15-9.2 R1, #17-10 R1, #22-6.5 R1, #22-6.5 R1, #22-9.1 R1 #22-9.2 R1,

#24-9.2 R1, #24.9.1 R1A, #L26-2.8 R1, #30.8.2 R1, #32-3.8 R1 and #36.1 R1).

(3) Of 150 weld records, 50% contained at least one discrepancy in a reference to an incorrect drawing number or cross reference between an NDE report and the weld record.

(4) In some cases, all three segments of a clip-angle weld were grouped on one weld record such that it could not be determined which of several welders worked on which segment.

(5) The records package does not identify the type and size of defects identified by magnetic particle examinations of the original welds.

The weld repair records showed extensive involvement of quality control inspection and contracted nondestructive testing during the weld repairs of structural steel at elevation 524. Magnetic particle inspection of repair excavations, root pass, mid-way, and final pass welding, including examinations with and without welding preheat, exceed applicable code requirements and are generally documented. The records package and personnel interviews have not suggested that the repairs were done without due care, but rather that personnel involved were less than rigorous in their documentation of work. Although the current document revisions are identifying the discrepancies for evaluation and action, the repetition and number of discrepancies demonstrate that the documentation aspect of the QA program may need attention.

The WBG Work Procedure WP-42 revision 13 part 2.4.2.3 requires "When the weld(s) is complete and all required inspections are performed and documents are correct, the Q.C. inspector shall sign and date the form...". Many of the forms had been signed, evidencing final review by the inspector. Many had not been signed, although the documents had been offered to Burns and Roe as complete. Timely and proper review of the weld repair packages upon completion of each repair should have resulted in identification and correction of deficiencies at that time, including any in-process rework which may have been warranted.

The many omissions and inconsistencies currently being reviewed and identified by the document review team appear to demonstrate that the current records may not provide adequate assurance that the QC activities required for safety-related work were properly performed. The broad failure of the WBG inspectors and/or document reviewers

to identify these problems prior to turnover of the documents for preliminary review to B&R appears to represent a case where procedures and specifications were not applied to the work and is relevant to the information requested in the Commission's letter dated June 17, 1980. This item will be subsequently examined following the requested review by the licensee.
(50-397/80-08/39)

(6) The structural steel weld repairs at elevation 524 involved magnetic particle testing of the various connecting welds, marking of areas requiring excavation/ exploration, and rewelding of excavated areas. Drawings #FSK-215 thru FSK-217 established codings for the individual segments of welds (e.g. upper horizontal, lower horizontal, and vertical legs of each arm of a beam clip). Breakdown into such small segments provides a means to identify locations of repair areas more precisely than by only end connection number (which could have several segments of weld). The drawings did not identify each weld which required repair, but they did provide a means by which weld repair points could be discussed in individual repair records. If a particular weld segment was marked in the field as requiring repair, then the FSK drawing coding could be used on a corresponding weld record. There were no corresponding weld records for weld segments which did not require repair. If a weld repair record was not present for a particular weld segment, the WBG document reviewers did not know whether or not it should be present.

The failure to provide a checklist of individual weld records required is contrary to WBG's Field Quality Assurance Manual, and has resulted in lack of assurance that all weld repair records have been compiled for elevation 524. WBG cannot thus demonstrate that the applicable records are all identifiable and retreivable. This appears to be contrary to the requirements of Criterion XVII of Appendix B of 10 CFR 50.
(50-397/80-08/36)

1. Allegation: Pipe and steel has been received without the Charpy tests required by ASME III Class 2 and contract specifications. No specific examples were identified.

Finding: The allegation could not be substantiated. Material Status Log and Weekly Report of Material on Hold show that material has arrived on-site without required Charpy test

documentation. This was confirmed in interviews with WBG receiving inspection personnel. However, the above records and interviews indicate that the material had not cleared receiving inspection and had been placed on "Hold" status until the required test results were obtained. There appears to be no items at this time for which Charpy test data has not been received, although QC Tags #34467, 34393, 43747, 43271, 43855, and 48753 show that missing Charpy test results have been cause for holding actions between February 1979 to March 1980 for bolts and weld material. The inspector had no further questions on this item.

m. Allegation: In 1978 WBG took packages out of the vault so the NRC would not see them.

Finding: The allegation was not substantiated. The inspection of the document control vault records and discussions with document control clerks and supervisors did not disclose any anomalies in the handling of records in this area.

12. Unresolved/Followup Items

Unresolved/followup items are matters about which more information is required to ascertain whether they are acceptable items, items of noncompliance, or deviations. These types of items have been identified throughout the report and will be examined during future inspections.

13. Management Interview

A meeting between licensee representatives (denoted in paragraph 1) and an NRC Region V Supervisor was held on July 24, 1980, during which the results of the investigation and NRC concerns were discussed. The licensee agreed to provide evaluation and/or resolution for those followup items identified in the report body and acknowledged the apparent items of noncompliance. Preliminary management meetings were held with licensee representatives on June 6 and 20, 1980 to appraise the licensee of the apparent substance, and potential seriousness of the preliminary investigation results.

The Region V Supervisor expressed concerns regarding licensee/contractor practices and actions in the areas of design review, review/reporting of potential 50.55(e) items, documentation of and/or resolution of contractor inspection reports or nonconformance reports, evaluation and corrective action regarding piping minimum wall problems previously identified, QC inspector training and verification of knowledge level, and the apparent failure of contractor work/QC procedures to adequately implement the requirements of the ASME Code and the

contract specifications. The licensee agreed to evaluate and resolve the NRC concerns identified above.

NOTE: The first two pages of this document were detached and could not be located in Region V files, however, it is the recollection of the Region V Section Chief in charge of the investigation that no circled items appeared on these pages.

ATTACHMENT 4

40. Fischer-Porter ( )wmeters (rotometers) in ASME ( )stems have been designed by a company that does not have an N-stamp (Fischer-Porter) contrary to ASME III Requirements (Document # 305)

41. Serious minimum pipe wall problems exist:
   a. Counterbores made too deeply (See memo # 304)
   b. Burns & Roe didn't specify enough wall. The AI ran one calc. showing that MS pipe did not have enough wall. B/R reduced corrosion allowance from 1/8" to .090 for these specific pipes only. (See PED 215-M1747), B/R allows additions 12½% reduction in wall for surface blemishes. B/R has not checked other pipes for similar problem. (See document # 303)

42. WBG buying piping to ASME 1977 Edition w/o certifying that it meets requirements of 1971 Edition W73 Add. as required in Section 15Q "Pipe Supports" for Contract 215.

43. Equip. Pads & Concrete Floor - Records are insufficient to determine whether or not rebar is there. Curing records not consistently kept and those kept may be unsatisfactory. (Documents # 400, 401, 402).

44. RFI procedure used on site is not the one called for in spec. RFI form is different.

45. Contract spec. required TSP in piping system, but a letter from Burns & Roe to WBG deletes requirement.

Dodds

Laminations in structural steel in steam tunnel - Being handled. Pybus steel vendor insp. by Richard Laughton & Rorg insp.

Arc strikes away from weld on hangers not required to repair. OK on structural steel.

1. Desk broken into & records relating to material traceability were taken. No evidence of forceful entry.

2. Look into question of MIC on storage racks could provide mtrl. traceability. Not designed for traceability.

3. NPS hangers stamped with large Numbers Construction convenience steel used and stamped with heat nos. provided by NPS. Check 78-79 time period. Two letter id. General Foreman. added

4. Initial installation (i.e., prior to 1977) for about 1 year did not have procedures for installation of hangers. Requirements not in place.

Previous INC - Corrective action was satisfactory

5. Construction convenience steel bulk ordered used on all proj? How controlled? or fence being torn down.

6. Found double numbers on hangers. Used wrong numbers. added Examined 15 hangers no double #s.

7. End prep of pipe - Clean with emery cloth only - don't proceed to bright metal. Worried about min. wall.

8. Condensate pipe used several welders. Only one welder of record (ie. final passes)

9. Check materials at 548' elevation.

added ID angle iron on pallet in Class 1 storage w/o heat nos.

1. Ed Harrington/Pete Garcia/Roy Clause - Taped session on inspector i.d. issues - what's wrong on the project.

2. I.d. of items in contract spec. not included in proj. requirements/procedures. Mgmt. Interim - matrix check with PSAR/FSAR commitment.

3. Arc strikes on hangers - Proc. okays - contrary to spec.

4. Anchor plates - Welding split anchor housing - did some welding.

5. PWS 102 reference on document where traceability is in question on hangers.

6. Minimum wall on socket welds may have been taken. Sampled, found 15% below min. wall. Cut out and replaced. Did no inspect additional sampling.

7. Lot of junk left in pipe. Files of Lloyd Norris, Level III, NDE indicates LT rejection of welds because of junk in area of interest. 16 shots.

8. Drains in plant plugged with debris - Q on flush out tests?

9. Care of valves during welding, weld repairs. 2 repairs then cut out so doesn't require engineer approval.

10. Valves may not be environmentally qualified for ~~reduction~~ radiation service.

11. Main steam may be below minimum wall.

12. Stop on Main Stm. Stop (west side) located such that valve may overdrive, ram against ceiling/flow and cause damage to system.

13. Circumstances related to Gilbert-Commonwealth check and certification of lo/hi drains and vents.

14. Begin installing small bore pipe to tolerances of ± 6" on iso where spec. is +2 -0 on iso (could be +6 -0) (Richard Layton i.d. problem).

15. QA audit procedure - limited scope operation - no muscle.

16. QA Manual requires QA Manager to examine IRs for trend evaluation monthly per ASME Survey "N" Stamp (Not done)

17. Dwg. RHR 897 - 2027, FW 13, azimuth 315°, elevation 552'. Reactor vessel nozzle to feedwater saw drop turn through/Reshot OK should be rejected. Still checking out. WPPSS may be checking.

18. Question on availability of procedures for QA insp. Copies all removed from field except for one copy. (Not quite true - ? others outside RB in trailers)

19. As-built done from desk rather than walk down.

20. Main air intake into control room. Flanges may not be properly insulated. Resistor reading should be 1 M? - was 1 ohm.

21. Order of review of documentation is in question. Engineering was supposed to do document review prior to as-builts. Instead, does review after final QC sign off of as-builts review is done (may make changes QC unaware of).

22. Engineering may back date documentation rather than follow SOP of entering review date and initial. "Can go to most any documentation package and find error:

23. Stores requisition records not given to Owner for review. Could lose traceability. (QCI [illegible] require stores req. to be a permanent document.)

24. LPCS & HPCS. NCR on pitting and indentations below minimum wall. This should have been identified by associated pipe. WPPSS has issued an NCR on pipe in LPCS but may not have done so on HPCS. IR prepared by inspector.

25. How are IRs voided? Feedback to inspector. Is justification provided to close the loop on outstanding IRs.

26. Welding department has many references to unconsumed inserts.

27. Contract requires RT of 10% of each new welders work for each size of pipe and position welded. May not be following this requirement religiously, rather RTs for QC of the "good" welders.

(4)

1. Inside CV. Cut out and replaced substantial quantity of pipe with wrong heat number due to a heat number mix up. Mostly 3/4" small bore pipe.

2. Use surplus pieces of material from another hanger. Transfer heat numbers. Constant retrofit on hangers.

3. Changes to procedures are production oriented rather than QC oriented.

4. Annual eye examinations were not given on schedule. Cancelled by order of Sly from February til April/May. (exams due in February - done in April or May)

5. Do not address arc strikes on hangers if not on weld.

6. Has one instance of wrong heat number on pipe hanger.

1. QAP/QCIs are prepared by Ed Harrington (Construction rather than QA/QC).

2. Training needs improvement. Crafts need training (Several complaints in this area.).

Action Items

1. Get information on MWR 975-4.6 @ elev. 501 - 4" SS AP&E spool. Should be reported as 50.55(e) item IR on 5 weld. Not QI.

2. Acceptance of Power Piping Hangers to commercial weld standards. (Examine several hangers to verify quality of welding.)

3. Reason for EQA reduction from 100% to 20% sample of completed hangers considering the high rejection rate, i.e.: approx. 80-90%.

4. ASME QAM: QCPs; WPs; Project Directive Contract Specification.

5. WPPSS audit of hanger doc. pkgs. approx. 1 month ago.

6. Verify as-builts not charged to reflect oversized welds.

7. Utilization of ~~apprentice~~ apprentice inspect~~ions~~ors.

1. QCP-24 revised to remove requirement for hanger inspections to check for critical characteristics such as arc strikes, tracability, elongated holes, oversized welds, critical weld symbols, etc...

2. Oversize welds or cases where four sides of plate were welded instead of two deemed acceptable.

3. EQA (IVI) punch sheets removed from final documentation packages.

4. EQA (IVI) does not have own set of procedures. Go to adjacent trailer to review procedures.

5. ? EQA (IVI) may not be functioning in accordance with QAM. (Get a copy of WBG's QAM)

6. Originally EQA did 100% inspection of hangers (audit). Had rejection rate of approx. 90%. Inspection requirements reduced to 20% random sample. Rejection rate still about 90-95%. Rejections are about 50% documentation - 50% material deficiencies.

7. Records of rework not being identified on detail drawings. (Not required)

8. WPPSS audit of hanger documentation discovered items missing from packages (Store requisitions, etc.).

9. Stores requisitions missing on EQA review suddenly appear - question validity of stores requisitions. (Green copies used to check in field, white goes in documentation packages. Can't prove anything wrong - suspicious.)

10. Instructed to accept hangers as long as one of the numbers on store req. or bill of material good. (Sly's memo on tracability.)

(6)

(This item was completely illegible to type - scribbled through)

12. As-builts are not changed to reflect oversized welds, only undersized welds. These are dispositioned as acceptable by WBG engineering. (?Should they be referred back to the designers for dispositioning, i.e., B&R engineering.)

13. Structural steel inside CV contains beam pockets, undersized welds, lack of fussion, undercut, slag, porosity, arc strikes, etc. Also, excessive grinding in base metal.

14. MT tests of welds of structural steel done cold rather preheat because slag pockets pop out. Re MT will show cracks.

15. Documenting  . As a single weld rather than 2 welds. OK

16. Root pass inspections are missed but are being bought off in final documentation packages for structural steel.

17. Lot of inspection of sacrificial shield was recorded for wrong weld seams; i.e.; look from inside out rather than outside in on weld map. | A | B | B instead of A

18. Forced to accept as being receiving inspected 2/4" floor drains supplied by Peter Kiwit (not on approved vendors list. Should have been Owner-accepted material, not WBG. Designated Class I air intake structure drains for turbine building. Drains installed 4/7/80.

19. Procedure 145 requires convenience steel to be painted yellow when placed in storage, i.e., not when removed.

20. People should be responsible for material ordered such as valves, hangers, etc. - Waste of money.

21. ~~Apperitice~~ Apprentice QC inspectors are buying hangers without a journeyman being present.

22. Classroom training is minimal and that given, instructors are not responsive to questions - accept what your told without question.

23. Do not return voided IRs to originator. This is required by the procedure.

24. QCP-24 acceptance criteria is different from specifications, i.e., allows application of 90 ft-lbs torque for 1/2-inch Hilties Quick Bolts rather than 50 ft-lbs.

Sp f OK

Action Items

1. IRs need copies/examples of IRs that were voided w/o being entered into the system - or given a number. w/Mike Brickle.

2. Copies of memos from engineer/QA that may override the procedure:

AT 3. Flashlight in Reactor pressure vessel drain. GE listing.

4.

AT 5. WNP 1/4 - valves may be in backward.

AT MWR 975-4.6 @ elevation 501' - Modified 4" SS AP&E spool. IR on 5 welds showed lack of penetration. Schedule pipe from vendor shop] No action taken on rest of spools supplied by AP&E. (Possible generic prob.)

Voided info by Engr

Ø-2 System ASME III, Class III - NSR decontamination solution line. Engineer does not want to prove - other prolems.

2. Case of pipe in CV where anytime made attachment had a problem with cracks or laminations - repaired, no action or looked at rest of pipe.

AT 3. Pipe inside CV, RC1C 695 at 606' elevation attaches to spare frame. Long run to pipe could be below minimum wall by UT. May have been dispositioned.

2-2

AT Had some BCG line TC, (55) on main steam line where purge gas was not established. Posibility of sugaring.

INC - 18, SS to SS weld 304.
Did not establish purge.
MS-58-1 thru 775 - 55-1 (FW-2)

5. Memo to welding engineers (PS6 #289) ref. P3, P4 & P5 materials allows lunch break or shift change as long as preheat maintained. (Note: No welding done since QC found out and disagreed with practice).? Does this constitute change in procedure?

6. Engineer says if pipe has heat number on storage racks and on isometrics (spool piece), number doesn't need to be on pipe. "Pup" pieces. ASME code pipe.

7. RHR-667-8.12 HtL-24897 not stomped between welds SA-5C. Painted on CS pipe. Wrote up on DCL as needing to be scribbed on pipe. (Verified by Kirsch. Await dispositioning of PCL finding.

X. AA0001 on main steam line in T.G. for level indications, changed out 3 but left in one. (Verified by Hernandez that this was a configuration change and condition is satisfactory).

9. Conservation took valve apart without QC authorization or removal/assembly from discovered. Hold tag put on valve since it was misty inside. (Still op.)

10. Rejecting all power piping hangers. At meeting included Monis, Webster, Walkins and Sly. QC constructed to accept welds to commercial weld standards. (i.e., trailer hitch).

Sandblasted and given to painting contractor who refused to paint because welds defective. Okay inside CV not outside. Practice has been in effect for 3 - 4 months. When get P.O. for Power Piping hangers, Mac Haye writes in commercial standards.

PN 11. Of a 20% sample of hangers with documentation in valut, 80% were found to be unsatisfactory and needed to be returned to QC for correction. (WPPSS initiated program).

12. QC's book of heat numbers disapeared for 4 - 5 hours during a QC verification check of correct materials in the hanger. Fab. Shop.

PN @ office 13. Weld workers on anchor support plates when bolts are in place. ? effect on anchor shafts. (One case where anchor pulled out from wall).

PN 14. Blanket NCRs on dispositioning of anchor bolt problems.

NNER 15. Procedures not readily available for review - holds job up. ~~Energy body~~ feels the pressure.

1. Scaffolding and tube block wedge between a line and structure where large bore piping comes out of sacrificial shield wall at 551-4' elevation.

2. Turbine Generator crane rail bolts were over torqued. There an 1200 bolts of which 2/3 were torqued before problem was discovered by QC for sample of 60 bolts demonistrated all to be over torqued. Resolution may be to replace the the 60 bolts rather than all bolts. Shims under hold down plates are suppose to be tight against rail. Many are stuffed with flat stock to achieve this.

3. At 524' elevation - Structural steel repair cannot determine from weld records when work was done. Hold plates are missing bolts). Records lack visibility to type and size of repare and/or traceability to filler metal or welder.

1. No formal on-site testing of QC inspectors OVT with first line QC inspector 5 - 6 week.

2. Dispositioning of IRs 49504 (2/6/80) - double heat no. on same piece of pipe. Orig. N-144-13 etched in pipe & painted over. Ht No. J816356 scribed thru paint. (J applicable to 2" sch. 80 not 2" sch 4-0). ✓ control of scribe-tools. Special authorization etc.

3. IR 4980, 2/12/80, No. number scribed on pipe - dispositioned to accept because traceability to Ht. No. 11-4-6) established thru w/p and vertical stress req. "sice HT No. N14403 on this pipe".

4. Investigation of 2" sch. 80 pipe in quarenteen heat no. 124776 and 12477 on 616 thru 18 of 1980 disclose entire section with longitudiental discontimuity the entire length of pipe #33 around the length of pipe ~~inspired~~ motion (visual inspection by QC—questionalbe areas [illegible] prior to installation). [illegible]

5. NOT LEDGIBLE. [illegible]

6. IR 4219 identifies problem with NIX NDE questions dispositioning of IR (dated 9/7 thru 9/14.

7. NCR-4898/IR-4287 - NCR Circumvented by PED-2018 - Work proceeded prior to NCR being dispositioned.

8. Qualif~~X~~ of Engineering.

9. Reaming of holes by crafts. Not being checked by QC in all cases.

10. Failure to recieve timely response from B/R on RFIs.

11. ~330 ft of 6 X 6 X 1½" tube steel mag. found cracks during installation of 181 [illegible] - 330 ft and ~20 ft left in store. [illegible]

12. By procedure, field engineer is allowed to change design by red line drawings. Specs require calcs in design change. Cases where welder couldn't make weld. Field engineer gives ok without forming calcs.

13. (Illegible - best guess on this one) No review of field engineers design calcs. (i.e., required by WBG program) Can red line drawings no one looks at design calcs.

14. Hanger designs from B&R that violate design criteria/sepcifications. Many are not installable because B&R engineering does not look at total building layout - i.e., other lines/cable trays, etc. Field Engineer then required to lay out to the best of his ability. Eng. may write (FRI about 6 mos. later, may get answer. Therefore if you want to get the job done you red line the drawing if you can define as a "minor" design change (1977-1978 are real problem years).

15. RIF-2760-RNR-R Hanger already installed per Rev. 0. By Rev. 1 B&R changes hanger design. Design fails deflection criteria and requires welding 50% across width of existing steel to .....flange. B&R response to field .....(Illegible)

16. (Illegible - best guess) IE6400-RHR-12 (RFI) Field engineer stated pipe anchor release as revised by B&R on 12/10/79 has insufficient reinforcing still in west wall. B&R response on 1/21/80 stated hanger should be re-designed. (?By who and when). 12/17/79.

17. B&R design guides may not address pipe bearing stress. Example provided in RFI generated 5/23/80 by KDC where actual was 165,000 psi and allowable was 37,500 psi. Could be a prevalent problem.

18. WP117 was revised by WBG in January 1980 - Still have not received response or approval - are continuing to work to an outmoded procedure.

19. Hanger FDR 385 or 358 was underdesigned and had additional bearing plate installed in place in the field. What effect does welding have on the concrete adjacent to the weld and .....(Illegible)

20. Illegible Example 19-18 appears to indicate lack of timely response / design control / Engineering by B/R.

21. There is a lack of design control.

22. EQA may not be looking for backup calculations.

23. The qualification of field engineers performing "red line engineering" (minor design changes) should be questioned. AE has given contractors ability to make design changes per PD-75 RG-3.1 without design review/control. Hanger LPCS-11 accepted by first line QC & Engineering. Can make field changes but does not have to justify as long as change meets procedure. Should require written tech. justification and/or calcs.

24. Problems ID by EQA are not being handled/dispositioned as nonconformances. Being handled as just another item.

25. QCP-2K - Max diameter cannot exceed >1/8" bolt diameter. COND 701 required extensive rework when field engineer requested check because QC had listed this item in NF 237 as not applicable. Spec is being misinterpreted by QC.

This could be a generic problem. HPCS-23 is example of "gross" case. Other EDR-133, LPCS-3 (......40-50 weeks). Cont. are reaming holes.

26. AEs design organization and criteria needs to be examined.

27. Out-of-plane stress on hangers is very weak - can conceivable over-stress welds. (i.e., FPC-120, FDR-384, RCC-115, CAS-517 CB/R supplied fix following RFI).

CAS 514 (A/E may say its ok based on immediate calc)

Design Guide M400 - may not contain criteria for out-of-plane stress.

28. NRC Bulletin 79-02. No clear criteria in M400 for stiffening anchor plates nor is direction being provided. How is this requirement of Bulletin being satisfied.

29. Criteria for off-center hanger base plates is lacking. COND 442 question B&R on this subject ......B&R did not consider this to be a critical dimension.

30. Have not seen any visibility of Owner or B&R in plant. Not ever present during installation.

NRC Internal Memoranda/Documents

	Addressed To	From	Date	Subject
1.	L. S. Rubenstein	M. D. Lynch	1/3/80	Forthcoming Meeting with WPPSS to Discuss NRC Views on QA/QC Inspectors
2.	W. J. Ward	R. C. Haynes	2/8/80	Spent Fuel Storage Racks Manufactured by Leckenby Company, Seattle, Washington
3.	G. W. Reinmuth	G. S. Spencer	3/17/80	Background Information for the Closeout of AITS Items H06000417 and H06000499
4.	Dudley Thompson	R. H. Engelken	3/31/80	Escalated Enforcement Action
5.	H. D. Thornburg	R. H. Engelken	4/4/80	Washington Nuclear Project No. 2 (WNP-2) Sacrificial Shield Wall (AITS No. H0503004)
6.	D. Thompson	H. D. Thornburg	4/7/80	WPPSS, WNP- Enforcement Package
7.	D. Thompson	R. H. Engelken	4/7/80 REISSUED 4/9/80	Investigation Report Concerning Work by Leckenby Company of Seattle, Washington for WNP-2
8.	G. W. Reinmuth	R. T. Dodds for G. S. Spencer	4/9/80	WPPSS Nuclear Project No. 2 Sacrificial Shield Wall (SSW) Corrective Action Plan Docket No. 50-397
9.	G. W. Reinmuth	G. S. Spencer	4/23/80	Preservice Inspection of Reactor Pressure Vessel at WNP-2
10.	G. W. Reinmuth	G. S. Spencer	4/29/80	Separation of Electrical Equipment and Systems at WNP-2 (filed in back of drawer)
11.	D. Thompson	H. Thornburg	5/02/80	WPPSS-2 Enforcement Package
12.	R. H. Vollmer	H. Thornburg	5/19/80	Transfer of Lead Responsibility for Repair to Sacrificial Shield Wall

NRC Internal Memoranda/Documents

	Addressed To	From	Date	Subject
13.	H. D. Thornburg	G. S. Spencer	6/18/80	Regional Evaluation of Licensee Performance at WNP-2
14.	B. J. Youngblood	S. S. Pawlicki	7/1/80	WNP-2 Sacrificial Shield Wall Corrective Action Plan
15.	L. J. Garvin	R. C. Haynes	7/3/80	re WPPSS's response to Mr. Stello's letter relating to the Civil Penalties
16.	A. D. Toth	D. F. Kirsch	7/7/80	Verification of Pipe Support Location
17.	G. S. Spencer	G. W. Reinmuth	7/15/80	Preservice Examination
18.	R. H. Engelken	D. Thompson	7/16/80	FOIA-80-344 from Dale R. Ulin
19.	Dudley Thompson	R. H. Engelken	7/30/80	Draft Order to Impose Civil Penalty on WPPSS (50-397)
20.	B. J. Youngblood	M. D. Lynch	7/31/80	Forthcoming Meeting with WPPSS Regarding the WNP-2 Sacrificial Wall
21.	The File	R. T. Dodds	7/31/80	RE: Investigation of 6/7/80 (Filed w/Inspection Report 80-08)
22.	Dudley Thompson	H. Thornburg	8/6/80	WPPSS-WNP-2 Enforcement Action
23.	B. J. Youngblood	M. D. Lynch	8/14/80	Forthcoming Meeting with WPPSS Regarding Their Proposed Corrective action on the WNP-2 Sacrificial Shield
24.	Dudley Thompson	R. H. Engelken	8/20/80	WPPSS Reply to Notice of Violation & 10CFR50.54(f) Letter, WNP-2
25.	U. Potapovs	G. S. Spencer	8/29/80	Request for VIB Inspection of Burns and Roe AITS No. F05030011

NRC Internal Memoranda/Documents

	Addressed To	From	Date	Subject
26.	Victor Stello	R. H. Engelken	12/11/80	SALP Meeting Reports
27.	No item 27.			
28.	Faulkenberry	M. Peranich	3/24/81	WPPSS No. 2 Sacrificial Shield Wall Hardship Exemption Request (Weld Repairs)
29.	E. L. Jordan	Faulkenberry	3/26/81	Request for NRR Review of WPPSS Revised QA Programs AITS No. F05030016
30.	B. J. Youngblood	F. Rosa	4/17/81	WNP-2 Cable Separation Criteria
31.	B. H. Grier	R. H. Engelken	4/29/81	Region V Use of Region I NDE Van
32.	Various	D. P. Haist	7/16/81	SALP Regional Board Review of WNP-2
33.	Richard Albrecht	R. H. Engelken	8/7/81	ltr. enclosing copy of an NRC internal briefing paper relating to our overall evaluation under NRC's SALP program for WNP-2
34.	A. Schwencer	R. Auluck	8/7/81	Forthcoming Management Meeting With WPPSS, 8/28/81 at 8:30 a.m.
35.	E. L. Jordan	J. L. Crews	9/29/81	Possible problem at WNP-2 regarding quality of Radiographs and integrity of safety-related welds
36.	G. W. Reinmuth	Faulkenberry	10/23/81	Nondestructive Concrete Structure Examination at Washington Nuclear Projects Nos. 2 and 3
37.	George Lear	D. C. Gupta	1/15/82	Report of Site Visit to WPPSS Nuclear Project No. 2 (WNP-2) on December 7, 1981

NRC Internal Memoranda/Documents

	Addressed To	From	Date	Subject
38.	Terry Harpster	Faulkenberry	1/22/82	Quality Assurance
39.	Z. R. Rosctoczy	R. L. Baer	1/27/82	Seismic Qualification of Switchgear with Rigid Conduit at WNP-2
40.	R. L. Tedesco	J. J. Kramer	2/11/82	Safety Evaluation Report Input, WNP-2 Chapter 14 Initial Test Program
41.	R. L. Tedesco	J. J. Kramer	2/12/82	LQB Input for Washington Nuclear Project (WNP-2)
42.	D. M. Sternberg	Faulkenberry	2/18/82	WNP-2 - Containment Penetrations for Instruments Sensing Lines Subject to Thermal Cycle Fatigue
43.	R. A. Schwencer	Faulkenberry	2/25/82	Soil Compaction and Design Verification at Washington Nuclear Project (WNP-2)
44.	T. W. Bishop	R. T. Dodds	3/3/82	Reactor Construction Inspection Program Status Review (1st Quarter, FY-82) - RPS-2 (All WPPSS Plants Included)
45.	James Lieberman	A. Grosso	3/12/82	Wallace/Superior
46.	E. L. Jordan	R. H. Engelken	3/31/82	Anonymous Letter Regarding Quality Assurance at WPPSS 1, 2 & 3 (AITS H07003390F05)
47.	U. E. Potapovs E. L. Jordan	T. W. Bishop	4/6/82	Examination of Radiographs of Welds in Piping Subassemblies Supplied to WPPSS-WNP-2 by Associated Piping and Engineering Corporation
48.	R. Auluck	P. Witley	4/16/82	Containment Out-of-Roundness
49.	R. H. Engelken	A. D. Toth	5/20/82	Management Meeting at Governor's Office, Olympia, Washington on May 15, 1982

NRC Internal Memoranda/Documents

	Addressed To	From	Date	Subject
50.	T. W. Bishop	R. T. Dodds	5/21/82	Reactor Construction Inspection Program Status Review (1st Half, FY-82) - RPS-2
51.	M. Srinivasan	S. Rhow	5/82	Trip Report on Site Visit of WNP-2
52.	R. L. Tedesco	J. J. Kramer	5/29/82	LQB Input for Washington Nuclear Project 2 (WNP-2) SER Supplement, Washington Public Power Supply System
53.	H. R. Denton	R. H. Engelken	9/14/82	WNP-2 Electrical Cable Separation
54.	Multiple Addressees	T. M. Novak	10/01/82	Request for Staff Assistance at ACRS Full Committee Meeting
55.	H. Denton	R. H. Engelken	10/5/82	Self-Initiated Evaluation of WNP-2
56.	A. Schwencer	R. Auluck	10/06/82	Meeting Summary - WNP-2 Electrical Cable Separation
57.	R. Auluck	K. C. Leu	10/15/82	Containment Out-of-Roundness
58.	-	-	11/10/82	Report - WNP-2 Plant Verification Meeting
59.	File	E. Abbott	12/17/82	Trip Report to WPPSS on 12/02/82
60.	R. Auluck	K. C. Leu	12/27/82	Containment Out-of-Roundness
61.	Note to R.H.E.	Tom Murley	2/14/83	Observations on Visit to WNP 1 & 2 (1/27-28/83)
62.	A. Schwencer	D. Sternberg	2/18/83	FSAR Amendment No. 27, WNP-2
63.	R. H. Engelken	T. W. Bishop	3/1/83	Review of Licensee and NRC Actions Taken in Response to the 1980 WNP-2 NRC Order and 50.54(f) Letter
64.	D. Sternberg	R. W. Root	3/16/83	Lumped Mass Pipe Stress Analysis Loads

NRC Internal Memoranda/Documents

	Addressed To	From	Date	Subject
65.	----------	----------	3/22/83	Notice of Significant Licensee Meeting - 3/30/83 - WPPSS Mgmt Request to Discuss WNP-2 Project
66.	Varied	J. L. Crews	4/05/83	Potential Generic Issue: Anaconda Flexible Conduit Failed Environmental Qualif. at LOCA Conditions (#83-08)
67.	T. Novak	J. L. Crews	4/06/83	WNP-2 Independent Design Verification Program
68.	----------	----------	4/20/83	Report - Design Reverification Status Meeting
69.	Varied	Crews	4/25/83	Potentially Generic Issue 83-14
70.	J. Elin	G. Yuhas	5/24/83	WNP-2, 90 Day Pre-OI 94300B Input
71.	----------	----------	6/02/83	Meeting Notice - June 7, 1983 - Program Review Status
72.	E. Jordan	S. Schwartz	6/10/83	WPPSS 2 Information Gathering Trip
73.	J. D. Martin	D. Sternberg	6/14/83	Re: Inspection Report 50-397/83-17, para. 2
74.	R. Vollmer	J. M. Taylor	7/1/83	WNP-2 Component Support Design and Construction
75.	Eisenhut	Martin	7/12/83	Forwards list of remaining open items
76.	G. Lear	K. C. Leu	7/13/83	WNP-2 Construction Problem and its Potential Impact on Licensing Schedule
77.	Al Toth	Bill Wagner	7/18/83	Metallographic Examination of Pipe Welds
78.	R. Dodds	R. Auluck	7/27/83	RV Assistance in Closing NRR Licensing Issues

NRC Internal Memoranda/Documents

	Addressed To	From	Date	Subject
79.	E. Case	Martin	8/01/83	Corrective Measures Taken to Limit IGSCC Problems
80.	G. Bagchi	R. F. Heishman	8/2/83	Rigid Conduit Connections to Electrical Equipment Enclosures
81.	R. Auluck	R. Dodds	8/16/83	Forwards cy of memo sent to E. G. Case regarding plans to limit IGSCC problems.
82.	R. Auluck	R. Dodds	8/19/83	Reactor Licensing Assistance in Closing RV Construction Deficiency Issues Re: WNP-2
83.	D. Eisenhut	R. Auluck	9/01/83	NRR Input to SALP - See SALP File
84.	Varied	T. Bishop	9/06/83	Potentially Generic Issue Data Sheet 83-29 DG1A Bearing Failure
85.	Varied	T. Bishop	9/14/83	Potentially Generic Issued Data Sheet 83-31 Failure of Transfer Circuitry During Preop Testing
86.	A. Schwencer	R. Dodds	9/21/83	Significant Construction Deficiency Reports Involving Design Deficiencies
87.	Varied	T. Bishop	9/21/83	Potential Generic Issue Data Sheet 83-32
88.	Varied	T. Bishop	9/26/83	Potential Generic Issued Data Sheet 83-33