UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-390/81-19 and 50-391/81-19

Licensee: Tennessee Valley Authority
500A Chestnut Street
Chattanooga, Tennessee 37401

Facility Name: Watts Bar

Docket Nos. 50-390 and 50-391

License Nos. CPPR-91 and CPPR-92

Inspection at Watts Bar site near Spring City, Tennessee

Inspectors: /s/ W. P. Kleinsorge — 10/6/81 Date Signed

/s/ J. L. Coley — 10/6/81 Date Signed

/s/ J. W. York — 10/6/81 Date Signed

Accompanying Personnel: A. R. Herdt

Approved by: /s/ A. R. Herdt, Section Chief — 10/6/81 Date Signed
Engineering Inspection Branch
Engineering and Technical Inspection Division

SUMMARY

Inspection on September 8-11, 1981

Areas Inspected

This routine, unannounced inspection involved 103 inspector-hours on site in the areas of licensee action on previous inspection findings (Units 1 and 2), construction activities (Units 1 and 2), reactor coolant pressure boundary piping (Unit 2), safety related piping (Units 1 and 2), safety related structures (Unit 1), licensee identified items (Units 1 and 2), inspector follow-up items (Units 1 and 2), IE Bulletin 79-02, Concrete Expansion Anchors (Units 1 and 2), IE Bulletin 79-14, Seisimic Analysis for As-Built Safety Related Piping Systems (Units 1 and 2) and IE Bulletin 80-08, Examination of Containment Liner Penetration Welds (Units 1 and 2).

Results

Of the 10 areas inspected, no violations or deviations were identified in 8 areas; 2 violations were found in 2 areas (Violation - Failure to Correctly Install Locking Devices on All Main Coolant Pump Oil Coolers, paragraph 5; Violation - Failure to Follow Hanger Inspection Procedure - paragraph 8a).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. E. Wilkins, Project Manager
*S. Johnson, Asst. Construction Engineer
*T. Bucy, Asst. Construction Engineer
*S. J. Boney, Supervisor, Welding Engineering Unit
*J. Weinbaum, Supervisor, QC&R Unit
*T. R. Trail, MSU, NRC Response Coordinator
*F. Smith, Supervisor, Civil Engineering Unit
*S. R. Martin, Engineer, Hanger Engineering Unit
*T. R. Brown, Supervisor, Hanger Engineering Unit
*S. R. Stout, OEDC - Licensing Engineer

Other licensee employees contacted included construction craftsmen, technicians and office personnel.

NRC Resident Inspector

*J. A. McDonald
*T. Heatherly

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 11, 1981 with those persons indicated in paragraph 1 above. The inspectors identified the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

Violation 390, 391/81-19-01: "Failure to Correctly Install Locking Devices on All Main Coolant Pump Oil Coolers" - paragraph 5.

Violation 390/81-19-02: "Failure to Follow the Hanger Inspection Procedure" - paragraph 8a.

Inspector Follow-up Item 390/81-19-03: "Drawing Error on IC-158" - paragraph 7a(1).

Inspector Follow-up Item 390/81-19-04: "Drawing Error on E-2879-195" - paragraph 7a(2).

Licensee Identified Item 390, 391/81-19-05: "Welder Qualification - NCR - 3248R" - paragraph 9a.

Licensee Identified Item 390, 391/81-19-06: "CEB 8008 Valve Accelerations For Piping Analysis" - paragraph 9b.

Licensee Identified Item 390, 391/81-19-07: "WBN SWP 8007 Design of Self Drilling Expension Anchors" - paragraph 9c.

3. Licensee Action on Previous Inspection Findings

a. (Closed) Unresolved Item 50-390/391/81-12-01: Review of weld records for compliance with ASME interpretation IX-78-92. This item dealt with welders who had been qualified using a combination of GTA and SMA welding processes on 3/4" wall pipe test assemblies. Based on this test welders were given qualifications for 3/16" to unlimited thickness in accordance with the requirements of Process Specification 1.M.2.2(2) of TVA General Construction Specification G.29M. Based on ASME Interpretation IX-78-92 dated September 25, 1978, the above test assemblies would qualify welders for a maximum thickness of 1-½ inch. It should be noted that this problem had been previously identified at Hartsville and discussions with the licensee revealed that revision 18 to General Specification G-29M is in process in response to the Hartsville item. This revision deletes all combination process test assemblies which will solve the problem for the future. In addition, the licensee performed a complete review of welders with combination certifications to verify whether production welds made at WBNP were in compliance with ASME Interpretation IX-78-92. One welder and five weld joints were found not to be in compliance with ASME Interpretation IX-78-92. All five welds however had passed radiographic examination (RT) and RT of the weld joints establishes their acceptability as well as establishes the qualification of the welder as provided by ASME Section IX and clarified by ASME Code Interpretation IX-80-48 dated August 15, 1980. This item is considered closed.

b. (Closed) Infraction 390/80-25-01 and 391/80-19-01: Failure to Provide Adequate Procedure for Hanger Inspection. The licensee's letter of response dated October 21, 1980 has been reviewed and determined to be acceptable by Region II. The inspectors held discussions with the IEB 79-02 Program Manager and examined the corrective actions as stated in the letter of response. The inspectors concluded that TVA had determined the full extent of the subject noncompliance, performed the necessary survey and follow-up actions to correct the present conditions and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective actions identified in the letter of response have been implemented.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort (Units 1 and 2)

Construction Activities

The inspectors conducted a general inspection of the auxiliary building, containments Units 1 and 2, pipe storage areas and sheet metal fabrication shop to observe construction progress and construction activities such as welding, materials handling and control, housekeeping and storage.
With regard to the above inspection, the inspectors on September 8, 1981, accompanied by a representative of the licensee, noted that pants leg locking devices on the bottom flange of the reactor coolant pump, oil coolers in reactor buildings 1 and 2 were improperly installed. All locking devices had been bent; however, several on each cooler flange were not bent against the flat of the nut and in at least one case a flange joint was leaking (loop 4). In addition the inspectors noted that WBNP did not have any instructions on the proper installation of locking devices. 10 CFR 50 Appendix B Criterion V in part requires activities affecting quality to be prescribed by documented instructions, procedures and work accomplished in accordance with these instructions, procedures. This item was reported to the licensee as Violation 390, 391/81-19-01; Failure to Correctly Install Locking Devices on All Main Coolant Pump Oil Coolers.

Within the areas examined no violations or deviations were identified except as noted above.

6. Reactor Coolant Pressure Boundary Piping (Unit 2)

The inspectors observed welding work activities for reactor coolant pressure boundary (RCPB) piping. The applicable code for the installation of RCPB piping is the ASME B and PV code Section III Subsection NB, 1971 Edition with addenda through summer 1973.

The inspectors observed field welding activities by inspection of weld joints and review of records associated with RCPB piping at various stages of weld completion. Observations were made in order to determine whether the requirements of applicable specifications, standards, work and/or inspection procedures were met for the activities involved and in the following stages of weld completion. Actual observation of work was not possible as the window of opportunity had passed.

a. The inspectors examined records of weld joint fitup prior to welding, to determine whether identification/location, joint preparation and alignment, evidence of QC verification, meet applicable procedures. The following weld joints were examined.

WELD NO.	ISO NO.	SIZE	UNIT	SYSTEM
FW-13	IC-199	6"	2	Safety Injection
FW-14	IC-199	6"	2	Safety Injection
*FW-15	IC-199	6"	2	Safety Injection
WELD NO.	ISO NO.	SIZE	UNIT	SYSTEM
FW-3	IC-31	14"	2	Residual Heat Removal
FW-4	IC-31	14"	2	Residual Heat Removal
*FW-5	IC-31	10"	2	Residual Heat Removal
FW-6	IC-31	10"	2	Residual Heat Removal
FW-2	IC-31	14"	2	Residual Heat Removal
FW-2	IC-146	3"	2	Reactor Coolant
*FW-3	IC-146	3	2	Reactor Coolant
FW-4	IC-146	3	2	Reactor Coolant

b. The inspectors examined weld joint records where the root pass (only) had been completed to determine weld/welder identification, qualified welder/weld procedure, physical appearance of weld and evidence of QC verification. The joints of paragraph a above were examined.

c. The inspectors examined records of weld joints and weld joints of pipe/fitting (PPF) and pipe to component (PC) where welding was beyond the root pass to determine weld/welder identification, qualified welder/weld procedure, periodic checks of welding variables, use of specified weld material, proper interpass temperature and where applicable, pre-heat and post-weld heat treatment and physical appearance of weld (e.g. starts, stops, undercut and surface imperfections). The weld joints of paragraph a above were examined.

d. The inspectors examined the weld radiographs and records of welds of paragraph a above marked with (*) where nondestructive testing (NDE) had been in progress to determine; surface suitability, specified NDE being performed and with qualified personnel.

e. The inspectors observed activities at weld material issue stations to determine adequacy of; weld material storage/segregation, oven temperature, issue records and return of unused weld material. Also the inspectors observed work areas for uncontrolled weld material.

Within the areas examined no violations or deviations were identified.

7. Safety Related Piping (Units 1 and 2)

Review of Quality Records

The inspectors reviewed the quality records for safety related piping components and installation outside the reactor coolant pressure boundary. The applicable code for safety related piping construction installation is the ASME B and PV Code Section III, Subsection NC and ND, 1971 Edition with Addenda through Summer 1973.

a. The records review included, where applicable, the following material test reports/certification records, vendor manufacturing certifications, NSSS manufacturers quality release forms. Receiving inspection reports (including records of disposition of nonconforming materials) installation records (checklists, isometrics, NDE and inspection, hydrostatic testing, cleanliness, qualification of inspection personnel).

SERIAL/HEAT NO.	UNIT NO	SYSTEM
11421	2	Auxiliary Feedwater
11422	2	Auxiliary Feedwater
6688	1	Auxiliary Feedwater
6689	1	Auxiliary Feedwater
9703	1	Component Cooling
9704	1	Component Cooling
12069	2	Component Cooling
141343	2	Component Cooling
9693	1	Component Cooling
9694	1	Component Cooling
9692	1	Component Cooling
9242	1 & 2	Fuel Pool Cooling & Cleaning
9243	1 & 2	Fuel Pool Cooling & Cleaning
9247	1 & 2	Fuel Pool Cooling & Cleaning
9248	1 & 2	Fuel Pool Cooling & Cleaning
11032	2	Upper Head Injection
11033	2	Upper Head Injection
6926	1	Upper Head Injection
6927	1	Upper Head Injection
12077	2	Component Cooling
12076	2	Component Cooling

(1) With regard to the above inspection the inspectors noted that WBN Drawing E-2879-IC-158, "Component Cooling" incorrectly identified IC-157 FW-10 as IC-157 FW-9. The licensee indicated that they would look into the matter. The inspectors stated that the above would be identified as inspector follow-up item 390/81-19-30: Drawing Error on IC-148.

(2) With regard to the above inspection the inspectors noted that Dravo Drawing No. 2879-195, the drawing for pipe spool Serial No. 6927, does not reflect a TVA made modification butt weld, between Dravo Weld "B" and "D." The licensee indicated that they would look into the matter. The inspectors stated that the above would be identified as inspector follow-up item 390/81-19-04: Drawing Error on E-2879-195.

Within the areas examined no violations or deviations were identified.

8. Safety Related Structures (Unit 1)

Review of Quality Records

The inspectors reviewed the quality records and performed a visual examination on component welding at safety related structures/supports outside the containment to determine whether these records reflect work accomplishment consistent with NRC requirements and SAR commitments.

a. The following completed weld records were reviewed in the areas of visual dimensional inspections, weld history, preheat and interpass temperatures, stress relief, NDE, weld repair, welder qualification, and inspector qualification, as applicable to each weld:

ISO/DWG. NUMBER	COMPONENT
48W1707-20-R-5	PD07-23
48W1707-19-R-2	PD07-20
48W1707-03	PD07-25
48W1707-03	PD07-36
48W1707-03	PD07-37
41N315-2-3	70-1CC-R181

During a visual examination of the above structures/support the inspectors noted that the jam nuts on the struts for hanger 70-1CC-R181 had not been tightened. The licensee's record of visual inspection, however, indicated that all bolts were properly tightened in accordance with WBNP-QCP-4.23R2 Appendix 2.

Paragraph 7.1.1 of Appendix 2 stated that, "Bolts without washers shall show no visible gap between the bolt head and the nut and the member being fastened. The bolt or nut shall be verified to be, as a minimum, handtight".

Paragraph 4.1 of Appendix 2 defines "handtight," as referring to the ability of not being able to loosen or turn a bolt or nut without the aid of a mechanical device. Failure to tighten the above from nuts could result in failure of the hanger to perform its design function. This item was reported as violation 390/81-19-02: Failure to follow hanger inspection procedure.

b. The inspectors reviewed the following nonconformance reports (NCR) relative to welding of safety related structures and supports to determine whether records were complete, legible, retrievable and properly closed out:

NCR NUMBER	SUBJECT
3590R	Nuts missing on documented supports
3350R	Insulation saddles for typical supports

NCR NUMBER	SUBJECT
2786R	Variable support incorrectly tapped
2604R	Fabrication and installation of support incorrect
3047R	Support removal without cutting release
3027R	Incorrect lot number assigned to hanger
3309R	Previously documented support removed
3257R	Lugs welded across pipe
2472R	Improper removal of hanger

Within the areas examined no violation or deviations were identified except as noted in paragraph 8a above.

9. Licensee Identified Items (50.55(e))(Units 1 & 2)

a. (Closed) Licensee Identified Item 390,391/81-19-05: Welder Qualification NCR-3248R. This deficiency identifies the failure of TVA's Division of Construction at Watts Bar Nuclear Plant to conform to criteria stated in TVA's General Construction Specification G-29C. TVA welding employees were not properly certified in accordance with the requirements of AWS D1.1, Section 5.0, as required by TVA General Construction Specification G-29C for performing fabrication of TVA Class I (limited) seismic pipe supports. All welders involved were qualified by radiographic examination of the test assembly to the requirements of the ASME Code for pipe of the appropriate thickness.

TVA reviewed the acceptance criteria for AWS D1.1 and ASME Section IX and determined that they are essentially equivalent in regard to welder qualification. The inspectors reviewed the licensee's comparison between welder qualifications to ASME and AWS. It was determined that ASME acceptance criterion was actually more restrictive. Therefore TVA's conclusion that structural welders qualified by welding a pipe joint to ASME would also be qualified to AWS is acceptable.

b. (Closed) Licensee Identified Item 390,391/81-19-07: WBN-SWP 8007 Design for Self Drilling Expension Anchers. The analysis performed by Begren-Paterson involved designing the pipe supports for Watts Bar using normalized loads supplied by TVA. The process for designing the supports called for the actual load carried by the expansion anchors.

These actual loads were then compared to a tabulated column of values given in TVA Civil Design Standard DS-C6.1. These tabulated values correspond to a certain diameter anchor which is capable of carrying the load.

TVA mistakenly advised B-P that it was acceptable to use the factored load column values given in DS-C6.1 when designing the expansion anchors. This information was incorrect as the service load column values given in DS-C6.1 should be used with normalized loads.

In a final report to Region II dated September 2, 1981, it was stated that TVA has completed an evaluation of 50 randomly selected support calculations out of approximately 950 B-P designed supports. The evaluation was based on the maximum anchor load from each of the 50 supports. On a statistical basis, TVA determined, that with a 99% confidence level, all anchors in the 950 supports designed by B-P are adequate and will not exceed their maximum allowable loads. Based on this evaluation and the above rationale the supports will be used as designed. This item is considered closed.

c. (Closed) Licensee Identified Item 390,391/81-19-06: CEB-8008 Valve Accelerations for Piping Analysis.

The calculation of seismic loads on certain safety related piping system valves was contracted out by TVA to the engineering firm EDS Nuclear, Inc. (EDS), in San Francisco. During a design review of the contractor's report, it was discovered that there was an apparent contradiction between TVA design criteria documents and the EDS analysis concerning allowable accelerations for valves. The TVA criterion states that valve accelerations shall be limited to 3 g's horizontal and 2 g's vertical. The EDS analysis report indicated that the allowable acceleration used in their analyses was 3.61 g's maximum (the square root of the sum of the squares combination of horizontal and vertical acceleration). It appeared that in certain situations, this could result in an acceleration in one plane being greater than allowed by the criteria.

In a final report to Region II dated September 8, 1981, it was stated that an evaluation of the increased stresses resulting from the additional loading was performed. The purpose of the evaluation was to assure that stress and operability requirements would not be jeopardized by the apparent increased vibratory loads. The evaluation revealed that stresses resulting from seismic input acceleration are a small fraction of the valve loading, and in no case would the increased seismic loading result in stress levels that would be unacceptable nor have adverse effects upon the ability of the valve to perform its active functions. This item is considered closed.

10. Inspector Follow-up Items

a. (Closed) Inspector Follow-up Item 390/81-06-02 and 391/81-06-01: Retrievability of Records/Radiographs. This item dealt with QC&R inability to retrieve records in a timely manner. In addition, the following inadequacies were noted in the control of official records at WBNP:

(1) Transfer forms used to transfer accepted radiographs from production to QC&R were not filed in an orderly manner.

(2) Records had been taken out of QC&R and not recorded on the records check-out list.

(3) Film packages were stored in boxes that did not adequately identify what the box contained.

(4) Inadequate review of records by QC&R.

(5) Access to records loosely controlled within QC&R.

The licensee stated that a record review was in progress and that all records in QC&R would be reviewed. The inspector had opened this item to track the licensee progress in this area and to document the licensee's verbal commitment. The inspectors' reviewed the licensee's progress in this area and found substantial improvement.

Adequate controls had been established within QC&R. For example, logs established for entering the vaults, records were being signed for, and storage of records were orderly and retrievable. In addition, the inspectors reviewed changes to WPNP QCI 1.8 for the control of records. Memorandums from QC&R to WBNP supervision and to records review personnel were also reviewed. It is apparent that the licensee intends to fulfill his commitment to upgrade the control and the quality of review of all official records with in QC&R; therefore, this item is considered closed.

b. (Closed) Inspector Follow-up Item 390/81-15-05: Inspection Date Discrepancy. This item concerns a discrepancy in the inspection dates for the delta ferrite inspection on weld joint FW-7 of ISO 40, between the vault and WEU copies of the Field Weld Operation Sheet. The inspectors randomly selected 96 Field Weld Operation Sheets and compared the vault copy with the WEU copy in the area of inspection dates. The inspectors determined the date discrepancy concerning FW-7 was an isolated case. This item is considered closed.

c. (Closed) Inspector Follow-up Item 391/81-15-0 "Erroneous Weld Number."

This item concerns an erroneous cut number for weld 2087B-D020-C2, on the Field Weld Operation Sheet. The inspectors reviewed the Field Weld Operation Sheet for the above weld joint and noted that the error had been corrected. This item is considered closed.

11. (Open) IE Bulletin 79-02: Pipe Support Base Plate Designs Using Concrete Expansion Anchors.

The licensee has not started the sampling program to satisfy part of the requirements for IEB 79-02 for Unit 2. The sampling program has been completed for Unit 1, but the final report has not been written. A meeting was held with site and ENDES CEB personnel to discuss the testing program for Unit 1 and several NCR's that related to concrete expansion anchors.

Although the sampling plan has been completed for IEB 79-02, TVA's General Construction Specification G32 requires a continued inspection of concrete expansion anchors. The following site specifications were reviewed and contain the IEB 79-02 program, and the acceptance criteria for the continued testing:

a. WBN-QCP-1.14, Rev 8, "Production Lot Acceptance Tests of Expansion type Bolt Anchors"

b. WBN-QCP4.23A, Rev 0, "Procedure for Field Determination of As-Constructed Location of Pipe Supports on Rigorously Analyzed Piping Systems."

The inspector observed testing of the anchors on the base plate of Hanger No. A060-70-49R3. Seven anchors were inspected and three of these had a pulltest performed.

Within the areas inspected, no violations or deviations were identified.

12. (Open) IE Bulletin 79-14: Seismic Analysis for As-Built Safety-Related Piping Systems (Units 1 and 2).

The licensee indicated that the official program for IEB 79-14 had not been initiated at Watts Bar at the time of the inspection. The licensee anticipated the formation of a special group and the beginning of the formal program to satisfy the requirements of IEB 79-14 would take place one to two weeks after this inspection. All of the inspection efforts by the licensee at Watts Bar for this bulletin are being concentrated on Unit 1. The inspector reviewed the inspection plan, "Watts Bar Nuclear Plant Units 1 and 2 Program Plan for IE Bulletin 79-14," dated June 30, 1981. This program is similar to Sequoyah 2 in that it has two phases. The licensee has defined these phases as follows:

a. Phase I will be a final verification of the seismic analysis of piping systems. A major portion of the effort will be a comparison of as-constructed data with seismic analysis input. A walkdown inspection of each analysis problem to verify that those supports and only those supports on the analysis isometric are installed, to check for potential interferences, to check for damaged supports, etc., will supplement the as-constructed verification program.

b. A Phase II Program will be conducted to verify the effectiveness of TVA's Phase I Program, to assure compliance with IE Bulletin 79-14, and as a verification program to demonstrate TVA's compliance with Bulletin 79-14. Phase II will be conducted by an independent audit team not involved in Phase I.

The Phase II program for Watts Bar will be the same as the Sequoyah 2 Phase 2 program. The licensee stated that the Phase 1 program will supplement some of the reinspections that are currently underway or that have just recently been completed.

The inspector reviewed the following current inspection program, "Program Plan-Field Inspection for Determination of As-Constructed Pipe Configuration and Location of Pipe Supports on Rigorously Analyzed Piping System," WBN-CEB 81-30. This program was initiated because it was discovered that some of the supports were designed or constructed outside the TVA specification G-43 tolerances. A field inspection to determine the actual as-constructed location of hangers presently installed has been completed and the analysis isometrics are being modified. After the drawings are completed ENDES CEB will perform an evaluation of as-contructed locations to verify or reestablish the piping system qualification.

The inspector reviewed the following specifications:

Sections of WBNP-QCP4.23A,Rev 0, "Procedure for Field Determination of As-Contructed Location of Pipe Supports on Rigorously Analyzed Piping Systems."

Appendix C of WBNP-QCP-4.13m R4, Addendum 3, "Fillet Weld Visual Acceptance Standards For Installed Pipe Hangers."

Appendix D of WBNP-QCP-4.13, R4, Addendum 3, "Fillet Weld Visual Acceptance Standards for Pipe Hangers Not Installed."

The following hangers were inspected:

Hanger No. 432-2-100-A-313 in the Residual Heat Removal System
Hanger No. 1-63-233 in the Safety Injection System
Hanger No. 1-63-392 in the Safety Injection System
Hanger No. 70-1CC-R181 in the Component Cooling System

Hanger No. 432-2-100-A-313 had not previously had a final acceptance inspection but the other three hangers had been previously inspected.

Within the areas examined no violations or deviations were identified with the exception of inspection of Hanger No. 70-1CC-R181 referred to in Paragraph 8a.

13. (Closed) IE Bulletin 80-08, Examination of Containment Liner Penetration Welds

This bulletin dealt with some licensees performing ultrasonic examinations in lieu of radiographic examination of the containment liner penetration welds. When radiography was used to reinspect these welds rejectable discontinuities were found. The apparent cause for UT missing these discontinuities was due to signals received from backing bars welded to the penetration ID's masking signals from actual defects. WBNP was asked to determine whether their facility contained Flued head design penetration connections or other designs with containment boundary butt weld(s) between the penetration sleeve and process piping as illustrated in Figure NE1201, Winter 1975 Addenda to the 1974 and later editions of the ASME B&PV code.

In an affirmative answer was reached WBNP was requested to determine the following:

a.. Applicability of the ASME Code including year and addenda and/or Regulatory Guide 1.19,

b. Type of nondestructive examinations performed during construction,

c. Type of weld joint (including pipe material and size) and whether or not backing bars were used,

d. Results of construction nondestructive examinations, i.e., if repairs were required, this should be identified including extent of repairs and description of defects encountered during repair, if known.

WBNP replied affirmatively concerning the use of penetrations containing the flued head design. However WBNP used an open butt type weld joint with no backing rings and performed visual and radiographic examinations of all penetrations. The results of construction NDE were as follows:

Of a total of 221 welds to date (out of 234 total), 155 were acceptable without repairs. Sixty-six welds had rejectable indications which have since been repaired. These welds were rejected either singularly or in combination for a number of reasons, including (in order of frequency of occurrence) incomplete fusion (40 repairs), slag (260), porosity (23), concave root (13), burn through (9), melt through (4), surface indications (40), inclusions (3), undercut (2), and one each of incomplete penetration, voids and cracks.

The inspectors reviewed radiographs of the following penetrations to determine radiographic quality, joint configuration and acceptability:

PENETRATION NO.	UNIT
MK-X-15	2
MK-X-17	2
MK-X-20A	2
MK-X-20B	2
MK-X-21	2
MK-X-22	2
MK-X-24	2

PENETRATION NO.	UNIT
MK-X-30	2
MK-X-32	2
MK-X-33	2
MK-X-45	2
MK-X-46	2
MK-X-81	2
MK-X-107	2
MK-X-4	1
MK-X-5	1
MK-X-14C	1
MK-X-29	1
MK-X-11	1

As a result of the licensee's response and the inspectors' review this bulletin is considered closed.