



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30323

Report Nos.: 50-390/86-14 and 50-391/86-14

Licensee: Tennessee Valley Authority  
 6N11 B Missionary Place  
 1101 Market Street  
 Chattanooga, TN 37402-2801

Docket Nos.: 50-390 and 50-391 License Nos.: CPPR-91 and CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection Conducted: May 21 - June 20, 1986

|              |   |                |
|--------------|---|----------------|
| Inspectors:  | <u><i>R. E. Canoll for</i></u>                                    | <u>7/23/86</u> |
|              | M. W. Branch, Senior Resident Inspector<br>Operations             | Date Signed    |
|              | <u><i>R. E. Canoll for</i></u>                                    | <u>7/23/86</u> |
|              | G. A. Walton, Senior Resident Inspector<br>Construction           | Date Signed    |
|              | <u><i>R. E. Canoll for</i></u>                                    | <u>7/23/86</u> |
|              | W. E. Holland, Resident Inspector                                 | Date Signed    |
|              | <u><i>R. E. Canoll for</i></u>                                    | <u>7/23/86</u> |
|              | C. W. Caldwell, Resident Inspector                                | Date Signed    |
| Approved by: | <u><i>[Signature]</i></u>   | <u>7/23/86</u> |
|              | M. B. Shymlock, Chief, Section 1C<br>Division of Reactor Projects | Date Signed    |

SUMMARY

Scope: This routine inspection was conducted in the areas of licensee action on previous enforcement items, licensee action on inspector identified items, followup of licensee identified items, fire prevention and fire protection, preoperational test program implementation verification, testing of pipe support and restraint systems, safety-related structures - welding (record review), safety related structures - supports (observation of work and work activities), reactor coolant pressure boundary piping - welding (observation of work and work activities), and safety related structures - welding (observation of work and work activities).

Results: Two violations were identified in this inspection report.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

E. R. Ennis, Acting Site Director  
\*G. Wadewitz, Construction Project Manager  
\*B. S. Willis, Acting Plant Manager  
R. C. Parker, Site Quality Assurance Manager  
H. B. Bounds, Maintenance Superintendent  
J. E. Gibbs, Site Services Manager  
\*J. P. Mulkey, Quality Assurance Supervisor  
R. Norman Jr., Acting Operations and Engineering Superintendent  
R. E. Bradley, Acting Operations Supervisor  
R. C. Miles, Modifications Manager  
R. D. Tolley, Design Services Manager  
R. A. Pedde, Unit 2 Nuclear Project Manager  
\*H. M. De Souza, Electrical Maintenance Supervisor  
J. S. Woods, Instrument Maintenance Supervisor  
\*J. D. Collins, Mechanical Maintenance Supervisor  
M. K. Jones, Engineering Group Supervisor  
R. A. Beck, Health Physics Supervisor  
\*J. A. McDonald, Acting Licensing Manager  
\*R. R. Garu, Preoperational Test Section Supervisor  
\*R. B. Jones III, Modifications Group C Engineering Supervisor  
\*T. W. Hayes, Nuclear Licensing Unit Supervisor  
P. L. Candage, Mechanical Test Unit Supervisor  
\*L. E. Ottinger, Plant Compliance Staff, Nuclear Engineer  
C. A. Borelli, Plant Compliance Staff, Nuclear Engineer  
\*G. R. Owens, Nuclear Engineer, Nuclear Licensing Section  
R. L. McKnight, Projects Engineer, Design Services  
\*M. A. Reeves, Project Engineer  
C. Riedl, Nuclear Engineer, Nuclear Licensing Staff  
D. Bogaty, Civil Engineer, Civil Engineering Branch  
\*P. Snyder, Nuclear Engineer  
\*V. Kaminsky, Project Engineer

Other licensee employees contacted included engineers, technicians, nuclear power supervisors, and construction supervisors.

\*Attended exit interview

## 2. Exit Interview

The inspection scope and findings were summarized on June 25, 1986, with those persons indicated by an asterisk in paragraph one above. The following new items were discussed:

- Two violations: One violation for the failure to establish measures to ensure that deviations from quality standards are controlled (paragraph 11.a); and one violation of an inadequate procedure and failure to follow procedure with regard to scaffolding supported from electrical cable trays (paragraph 11.b).
- Four unresolved items: One item dealing with a review of several areas to determine adequacy of the program (paragraph 5.d); one item dealing with post weld heat treatment (paragraph 10); one item dealing with ASME Section XI applicability to Unit 1 (paragraph 12.a); and one item dealing with Code applicability on Unit 2 construction (paragraph 12.b).
- Three inspector followup items: One item with regard to plant modifications and their effect on Hot Functional Testing (paragraph 8); one item with regard to adequacy of springnut mountings used with unistruts (paragraph 11.c); and one item with regard to the policy for use of standard practice documents to control activities affecting quality (paragraph 11.b).

The licensee acknowledged the inspection findings with no dissenting comments. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection. At no time during the inspection period did the inspectors provide written material to the licensee.

## 3. Licensee Action on Previous Enforcement Items (92702)

(Closed) Violation 390/85-53-01; Failure to Follow Procedures in Various Construction, Engineering, and Nuclear Power Areas. The subject item was identified in inspection report 390/85-53; 391/85-43 in which various examples of failure to follow procedures and inadequate procedures were identified. The examples identified were as follows:

- a. Failure to accomplish work activities in accordance with Administrative Instruction (AI)-8B, Rev. 1, "Control of Modification and Construction Completed Work on Transferred Systems Before Unit Licensing".
- b. Failure to accomplish work activities in accordance with Engineering Design (EN DES) procedure EN DES-EP-4.03, Rev. 4, "Field Change Requests".
- c. Inadequate workplan to establish the controls necessary for proper installation of the diesel generator (D/G) batteries and supporting rack hardware per the vendor design.

- d. Failure to accomplish work activities in accordance with EN DES-EP-3.10, Rev. 4, "Design Verification Methods and Performance of Design Verification".
- e. Failure to accomplish work activities in accordance with Technical Instruction (TI)-10, Rev. 24, "Calibration Program for Measuring and Test Equipment".
- f. Failure to implement the requirements of Administrative Instruction (AI)-2.8.3, Rev. 7, "Nonconformances 10 CFR 50.55(e)".

Since initial identification of these examples, the licensee has taken numerous actions to correct the deficiencies. In the response to violation 390/85-53-01 dated October 25, 1985 (MEDS No. L44 860103 802), the licensee outlined their corrective actions. The details of these actions with regards to the specific issues are as follows:

- Deficient Battery Support Rack Installation (Examples a, b, c, and d)

The licensee stated that electrical maintenance personnel recognized the need to fill the void that was left by removal of the three battery cells. The licensee indicated that they had issued nonconformance report (NCR) W-245-P which identified that the design drawings were revised per engineering change notice (ECN) 5872 to remove the plywood spacer and define the use of an adjustable end bracket and cell hold down straps. The licensee evaluated this NCR for reportability in accordance with 10CFR 50.55(e) and as a result, construction deficiency report (CDR) 390/85-34 was issued for Unit 1.

Other corrective actions taken by the licensee included training of the appropriate personnel. Training sessions were conducted for electrical maintenance engineering personnel to ensure that they were aware of the requirements related to the processing and approval of field change requests. Training sessions for Office of Engineering (OE) personnel were also conducted on the new Office of Engineering procedures which involve control of design documents including field change requests. These procedures more clearly define the responsibility for interface review when several groups are involved. In addition, the Civil Engineering Branch central staff has the responsibility for determining and verifying the adequacy of the seismic requirements for design changes when interdisciplinary reviews are required.

The inspector verified that the plywood spacers were removed, that the adjustable end brackets were properly installed, and that the battery hold down straps had been installed per the vendor drawings. The inspector also verified that the new Office of Engineering procedures had been revised to more clearly define actions and responsibilities.

- Control of Measuring and Test Equipment (M&TE) (Example 5)

In the response to the violation the licensee indicated that each out-of-tolerance condition has been evaluated and the calibration frequency has been adjusted or the M&TE has been retired where appropriate. In addition, the Critical Structures, Systems, and Components (CSSC) toolroom now has in place a program which is used for followup notification to sections which use M&TE 20 and 30 days after an investigation has been initiated, and for notification to the plant maintenance superintendent 31 days after an investigation has been initiated. Thus better control over M&TE should be maintained.

The inspector verified that the new program described in AI-5.9, "Control of Measuring and Test Equipment", Rev. 29, is being implemented and that M&TE out of tolerance reports were routed to the responsible sections as required in the instruction.

- Initiation of Nonconformances (Example 6)

The licensee indicated that the electrical maintenance section had issued NCR W-255-P to document and resolve the deficiency with the improper clutch oil seals installed on the essential raw cooling water (ERCW) pumps. The clutch assemblies were returned to the vendor in order to correct the deficiency. The corrected oil seal assemblies were returned from the vendor and installed by electrical maintenance. The licensee also indicated that training sessions were conducted for electrical maintenance engineering personnel to ensure that they are aware of the requirements which relate to the reporting deficiencies under the nonconformance program.

The inspector considers that these corrective actions are adequate to resolve the various deficiencies identified in the violation. Therefore, this item is closed.

Within this area inspected, no violations or deviations were identified.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. Four new unresolved items identified during this inspection are discussed in paragraphs 5.d, 10, 12.a, and 12.b.

5. Licensee Action on Inspector Identified Items (92701)

a. (OPEN) IFI 390/85-50-02; Followup on Intake Pumping Station Issues.

The inspector continued the inspection of corrective actions being implemented by the licensee with regard to Intake Pumping Station (IPS) issues. These issues were identified as an inspector followup item in inspection report 390/85-50. Followup inspections were addressed in

inspection reports 390/85-60 and 390/86-05. This update is being provided to address additional issues which have been identified since inspection report 390/86-05.

- ERCW Pumps; A new deficiency has been identified with regard to the eight ERCW pump motors. The licensee has experienced lower motor bearing failures and requested vendor support to evaluate the failures. ERCW pump motor D-A was pulled and disassembled with the vendor representative present to evaluate the bearing problem. The conclusion reached was that a plant procedural problem exists during pump motor reassembly which results in incorrect tolerance of bearing components leading to premature bearing failure. The licensee is in the process of evaluating this condition and will inspect all lower bearings and bearing cavities on the eight pump motors as part of the evaluation. The licensee has identified this deficiency in Corrective Action Report (CAR) 86-49. The inspector will continue to follow this issue and review the disposition of the CAR.
- Raw Cooling Water (RCW) Pumps; The inspector was informed by the licensee that a problem has been identified in RCW pump motors during vibration testing of the pumps. The inspector will obtain more information and update this issue in upcoming inspection reports.

- b. (Open) IFI 390/86-07-01; Review of the licensee's current Employee Concerns Program (ECP). The inspector is continuing the review of the implementation of the Watts Bar ECP. There continues to be a backlog of open issues although the licensee has increased the size of the onsite staff from 1 to 2. Discussions with the site representative for the ECP indicate that two additional investigators plus one full time secretary are currently being recruited.

The inspector discussed an additional concern with the onsite representative. This concern deals with the lack of a formal employee feed-back mechanism which would keep the employee informed as to the status of his/her concern. This lack of formal feed-back has resulted in several employees contacting the NRC resident inspectors because they feel that licensee personnel are not actively pursuing their concern. The inspector will continue to assess the backlog of concerns as well as monitoring the implementation of a formal feed-back mechanism.

- c. (Closed) IFI 390/85-53-04; Revision to and Implementation of AI-5.9 for Control of M&TE. The subject item was initially identified in inspection report 390/85-53; 391/85-43. During that review, the inspector found that the licensee had implemented a new program for control of M&TE. Administrative Instruction (AI)-5.9, "Control of Measuring and Test Equipment", Rev. 26, was issued to supersede

Technical Instruction (TI)-10, "Calibration Program for Measuring and Test Equipment", as the controlling document for this program. The inspector reviewed AI-5.9, Rev. 26, in September 1985, and found that it contained three significant changes to the M&TE program as was originally specified in TI-10. These changes were as follows:

- The records for all M&TE at Watts Bar will be maintained in one central file.
- All CSSC applications and usage for each piece of M&TE will be listed in that equipment's file.
- The responsibilities to establish and supervise the M&TE program has been consolidated from five sections into three (Support Services, Division of Power System Operations, and Instrument Maintenance).

During that review of AI-5.9, Rev. 26, the inspector noted that this procedure did not define a maximum time for completion of investigative reports for out-of-tolerance M&TE.

A subsequent review of AI-5.9, Rev. 29, found that a change to the procedure has been completed which requires an investigative report for out-of-tolerance M&TE to be closed within 30 days. The inspector also noted that the responsible section is notified 20 and 30 days after an out-of-tolerance report is issued. In addition, the maintenance superintendent is required to be notified 31 days after a report is issued if it has not been closed.

The licensee is in the process of developing a trend analysis program for M&TE. This program will be able to identify equipment that has been found out-of-tolerance on two consecutive calibrations or found out-of-tolerance a total of three times. The licensee indicated that they will gather data on the equipment as far back as 18 months to establish a baseline. The results of this trend analysis will be used to identify and evaluate the suitability for continued service of equipment.

The inspector considers that the program as identified in AI-5.9 should more easily identify questionable equipment and better track the use of M&TE. Therefore, this item is closed.

- d. (Closed) IFI 390/86-12-07, 391/86-13-07; Followup of Diesel Generator Field Flash Preoperational Test Deficiency. The subject item was identified in inspection report 390/86-12; 391/86-13 as a result of a deficiency found during preoperational (preop) testing of the Fifth Emergency Diesel Generator (D/G).

Significant Condition Report (SCR) WBN EEB 8633, and CDR 390/86-50; 391/86-47, were issued for both units when it was found that the 5th D/G would accelerate to 900 rpm but the generator field flash circuit would fail to flash during the cooldown cycle upon receipt of an

emergency start signal. The licensee evaluated the problem and found a design error by the manufacturer, Morrison Knudson Power Systems Division. The generator field flash reset circuit is interlocked with a relay contact which closes at approximately 200 rpm as engine speed is decreasing. However, during the cooldown cycle, the D/G speed is maintained at 450 rpm. Thus, the engine speed does not decrease low enough to reset the field flash relays. During this review, the licensee determined that this logic circuitry deficiency was also applicable to the original four D/Gs at Watts Bar and the D/Gs at Sequoyah and Browns Ferry nuclear plants. The inspector then questioned the licensee as to why this deficiency was not identified during preop testing of the original four D/Gs. The results of the discussions and inspection effort in this area are detailed in the following paragraphs.

During this inspection period, the inspector reviewed the preoperational tests and held discussions with the licensee to determine the failure of the licensee's program to previously identify this problem. A review of the scoping document for preoperational test TVA 13, "Onsite AC Distribution Systems", indicated that provisions for testing the D/G in the cooldown mode were not considered and no steps for testing the D/G in this manner were included in TVA 13. Regulatory Guide 1.108, Rev. 1, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants", Section C.1.b.(3), specifically requires the following: "Periodic testing of the diesel generator units should not impair the capability of the unit to supply emergency power within the required time. Where necessary, diesel generator unit design should include an emergency override of the test mode to permit response to bona fide signals." In Table 14.2-1 of the Final Safety Analysis Report (FSAR) one of the acceptance criteria listed is to confirm the capability of the D/Gs to supply emergency power within the required time frame, without being impaired during periodic testing as specified in the Regulatory Guide. Since the scoping document for preoperational test TVA 13 and the corresponding test did not confirm the capability of the D/Gs to perform as intended, this is a deviation from a commitment. Since this deficiency was identified by the licensee, has minor safety significance, was reported to the NRC; and will be corrected; no Notice of Deviation will be issued. Discussions with the licensee did indicate that the corrective actions proposed will not extend past those required to correct this specific problem.

The licensee indicated in their final report to the NRC dated May 20, 1986, that for corrective actions, they plan to jumper the relay contact from the reset function associated with the relay. This should solve the deficiency, but the inspector considers this as one example of a design error and the lack of the preoperational testing program to identify it. During discussions on June 24, and June 27, 1986, the inspector relayed this concern to the Preoperational Test Section Supervisor (PTSS). As a result of these discussions, the PTSS stated that the licensee will consider the necessity to review the D/G logic

circuitry. In addition, review of the scoping document and the Preoperational Test to ensure that all commitments have been met will also be considered. The PTSS indicated that any additional corrective actions resulting from the followup review will be identified in a revision to SCR WBN EEB 8633 and CDR 390/86-50; 391/86-47. Until the licensee performs a review of the D/G logic circuitry, Scoping Document, and Preoperational Test to determine the adequacy of the design and the testing program, this item is identified as Unresolved Item (390; 391/86-14-01).

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

6. Followup of Licensee Identified Items (92700)

(Closed) CDR 390/85-30; Annulus Sump Drain Valve Position Discrepancy. The subject issue was reported to the NRC in August 1985. The issue involved a design oversight with regard to improper design of the floor and equipment drain piping. This design would allow a differential pressure to be maintained between the annulus and the auxiliary building due to the ventilation system. Corrective action taken by the licensee was to install a water loop seal in the 10 inch annulus sump drain line. This would allow for ventilation operation during normal pressure differentials between the annulus and the auxiliary building. The annulus is maintained at a negative pressure when compared to the Auxiliary Building and the Reactor Building. The licensee completed work on this modification and the inspector verified the work by field inspection during a plant walkdown. The inspector also reviewed operations procedures to ensure that proper valve lineups were required when this drain path is operable. The inspector considers that all actions necessary have been accomplished. Therefore, this item is closed.

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

7. Fire Prevention and Fire Protection - Unit 2 (42051)

During plant tours, the inspectors conducted observations of fire prevention and protection activities in areas containing combustible materials where ignition of these materials could damage safety-related structures, systems, or components. The observations included verification that applicable requirements of Administrative Instruction (AI)-9.9 (Torch Cutting, Welding, and Open Flame Work Permit), Standard Practice WB-12.6 (Fire Brigade Instructor's Guide and Fire Brigade Handbook), AI-1.8 (Plant Housekeeping) and WBNP Quality Control Instruction (QCI)-1.36 (Storage and Housekeeping) were being implemented with regards to fire prevention and protection.

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

8. Preoperational Test Program Implementation Verification - Unit 1 (71302)

The inspectors conducted routine tours of the facility to make an independent assessment of equipment conditions, plant conditions, security, and adherence to regulatory requirements. The tours included: a general observation of plant areas to determine if fire hazards existed; observation of other activities in progress (e.g., maintenance, preoperational testing, etc.) to determine if they were being conducted in accordance with approved procedures; and observation of other activities which could damage installed equipment or instrumentation. The tours also included evaluation of system cleanliness controls and a review of logs maintained by test groups to identify problems that may be appropriate for additional followup.

A specific area reviewed during this inspection period was plant modifications performed since last Hot Functional Test (HFT). The inspector met with the Watts Bar PTSS for the purpose of discussing the impact of plant modification on the completed preoperational test program. The PTSS indicated that approximately 315 work plans were reviewed by his section between June 1985 and December 1985, and 43 significant modifications were identified as requiring post modification testing over and above the functional test specified in the work plan. They also indicated that since January 1986, 310 additional work plans have been reviewed with 63 requiring some degree of post modification testing. The PTSS stated that some of the newly identified testing will be added to the preoperational test open items list and tested by his section. However, most of the new tests will be accomplished by post-modification tests which should be prerequisites to the planned abbreviated HFT. The inspector will monitor licensee progress in this area and will review the document which controls the HFT. In addition, an independent review of post-modification testing will be performed. This item is identified as Inspector Followup Item (390/86-14-02).

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

9. Testing of Pipe Supports and Restraint Systems - Unit 1 (70370C)

The inspector toured areas of the Unit 1 auxiliary building and reactor building. Numerous snubbers and restraints were observed. Visual examinations were conducted to check for deterioration and physical damage of mechanical snubbers. Visual examinations were also conducted to check for proper installation of base support plates, fasteners, locknuts, brackets, and clamps of fixed pipe supports.

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

10. Safety Related Structures (Welding) - Review of Quality Records (55066B)

The inspector performed a record review of post weld heat treatment (PWHT) of weldments. This review included field weld 1-001A-D001-01, including furnace strip charts, to ascertain if work was performed in compliance with procedure, P.S.2.M.1.1(b), "Specifications for PWHT" (dated 4/6/78) and

American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code Section III. This weld joins the main steam line which is of base material SA234 WPB, ASME type P-1, to the steam generator which is of base material SA508, ASME type P-3. This section of steam line has a 32 inch diameter and 1.175 inch wall thickness. The inspector found the welding procedure GT-SM13-0-2, "Welding Procedure Specification", was qualified with PWHT at a maximum temperature of 1100 degrees Fahrenheit (°F) for twenty four hours.

A review of the actual PWHT strip charts indicated that the temperature during PWHT never reached 1100 °F. The maximum temperature for the control thermocouple (number 5) was 1030 °F. The Code specifies that PWHT will be performed at 1100 °F and held at this temperature (soak time) for one hour per inch of wall thickness. This was not achieved, however, ASME Section III allows a reduced temperature if the soak time is increased. An example: the maximum temperature can be 1050 °F if the hold time is increased to two hours per inch, or 1000 °F if the hold time is increased to three hours per inch. Extrapolation for temperatures between 1000 °F and 1100 °F is allowed by the Section III code. Therefore, for a temperature of 1030 °F the extrapolated hold time would be 2.4 hours per inch of wall thickness. The wall thickness for this area was specified as being 1.175 inches thick which would require a soak time of two hours and forty-nine minutes. The review of the strip charts indicated that the soak time at 1030 °F commenced at 12:30 p.m. and left this temperature at 2:18 p.m. This indicates that a soak time of one hour and forty eight minutes was used which is below the minimum hold time specified in the ASME Section III code.

When the inspector advised the licensee of this discrepancy, they indicated that a recent audit performed in this area found similar problems. This audit was conducted by Stone and Webster Engineering Corporation in early June 1986. As a result of this audit deficiency, the licensee subsequently reviewed all PWHT charts and found discrepancies in the PWHT records for 157 welds. The item found by the inspector had been identified by the licensee, but was not documented in any nonconformance report. On June 18, 1986, all deficiencies were identified on NCR 6888. In addition to the item discussed above, which involved three welds, it was identified that approximately 109 welds may have exceeded the total time (two hours) at temperature as qualified on the welding procedure qualification report. Another deficiency identified on the NCR indicated that 45 welds which received heat treatment referenced a procedure qualification report that was qualified for use without PWHT. The inspector determined that the licensee did have a procedure qualification report that was qualified for use with PWHT and the licensee's disposition of this issue may only entail the changing of records to reference the proper procedure qualification report.

From this review, it appeared that the licensee had identified this item before the inspector did and had requested engineering to disposition. This item is considered unresolved (390, 391/86-14-02) pending further licensee review and disposition for reportability.

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

11. Safety Related Structures (Supports) - Observation of Work and Work Activities (48063C)

a. Pipe Support Installation

During a facility tour on June 3, 1986, the inspector noted that ten fasteners on piping supports in the Unit 2 safety injection pump room did not have locking devices installed. A review of installation instructions on typical hanger drawings 63-2-SIS-R91 and 63-2-SIS-R92 indicated that no locking devices were required. However, a review of General Design Specification (G-53), "ASME Section III and Non-ASME Section III Bolting Material", revealed that locking devices were required on all threaded fasteners to prevent loosening during service. The inspector contacted the site QC organization to determine the status of the specific supports. QC indicated that the supports had been inspected and accepted in accordance with QCP 4.23.8, "Support Final Inspection", Rev. 7. This procedure verifies that drawing requirements were satisfied. However, it does not verify design requirements.

The inspector discussed the issue of not specifying design requirements on installation drawings with the staff from the licensee's Office of Engineering (OE). It was OE's position that General Design Specifications are not mandatory requirements and need only be specified on an output drawing when the designer feels a need to supplement the drawing requirements. A review of OE Procedure OEP-08, "Design Output", indicated that output documents must be traceable to design input requirements. OEP-06, "Design Input", defines standard specifications as an input document and requires that exceptions to these documents be technically justifiable and documented; however, no guidance is provided to designers with regard to control or documentation of deviations from these specifications, and the licensee could not provide any documentation for the specific fastener issue. Additionally, the inspector could not locate any procedure that would evaluate the effects on existing Output documents whenever an Input document is changed. Failure to establish measures to ensure that deviations from specifications are controlled is identified as violation (391/86-14-03) for Unit 2 only.

b. Electrical Cable Trays, Unit 1

During a site tour, the construction inspector noted that temporary scaffolding was supported on top of 18 inch wide safety related cable trays. The scaffolding was constructed using a combination of 6 x 6 and 2 x 10 inch lumber. The loading at two locations was mid span (between supports) on the cable trays and the platform was of sufficient size to allow two or more people on the platform. The inspector was concerned that the loading could exceed the design loading for the cable trays and cable tray supports.

A review of "Detailed Design Criteria For Category I Cable Tray Supports-WB-DC-20.21.1", Rev. 2, paragraph 4.2.1, "Dead Loads", required that supports for 18 inch wide cable trays be designed for a maximum deadweight of 45 lbs/ft. This 45 lbs/ft load represents the normal cable tray weight which includes the weights of cables, cable trays, fittings, splices, covers, and coatings. The design document further states that deadweights of other items, such as the supports, conduits, lighting fixtures, or any miscellaneous attached item shall be calculated directly and the top tray in a tier of cable trays shall be designed for an additional live load of 30 lb/ft to represent personnel.

The cable tray with the loading in question is number 4A2051 which is located in the Auxiliary Building, elevation 713. The scaffolding was supported on an intermediate level tray which had supports designed for only 45 lbs/ft deadload. The additional weight from the scaffolding and the workers directly on one loading point, could exceed the tray supports allowable loading.

During discussions held with the licensee, it was determined that Standard Practice WB7.1.16, Rev. 1, "Rigging Guidelines for Unlicensed Units", is the procedure used in the field for controlling loads on cable trays. Paragraph 7 titled "Cable Trays and Ducts" states: "Rigging from or supporting scaffolding from these items is not permitted. However, up to 400 pounds of live load due to personnel working on these items is permitted in any one span of cable tray or duct, provided duct is at least 12" by 12" in cross section. In addition, the duct or tray must be covered with plywood."

The licensee failed to follow WB7.1.16 by supporting scaffolding on cable trays which is not permitted by document WB7.1.16. Additionally, WB7.1.16 appears deficient in allowing up to 400 pounds of live loads on cable trays when the original design criteria in WB-DC-20.21.1 allows only 45 pounds per linear foot of total loading on intermediate level trays and 75 lbs/ft loading on the top tray. Failure to implement the requirements of design criteria WB-DC-20.21.1 and failure to control work activities in accordance with Standard Practice WB-7.1.16 is a violation (390/86-14-04) for Unit 1 only.

During this review, it was also noted that a Standard Practice was used to ensure that activities affecting quality are prescribed in accordance with documented instructions. It is the inspector's understanding that Standard Practices are to be used to establish office - level policy only and not for the accomplishment of safety related work. The inspector will review this area further with the licensee to determine their policy. This item is identified as Inspector Followup Item (390/86-14-05; 391/86-14-04).

c. Installation of Springnuts in Unistruts

During a visual inspection of the rework activities on the instrumentation lines, the inspector noted that instrumentation devices were being fastened to their supports by the use of unistrut material and springnuts. The springnuts are designed with a recessed knurled groove which fits into a lip on the unistrut and provides a locking feature to prevent slippage. The inspector identified several installed springnuts that failed to be properly seated in the lip.

The inspector discussed this concern with engineering personnel and questioned the ability of this installation to perform its intended function during a seismic event. The licensee advised the inspector that the supports identified had not been inspected by Quality Control (QC) personnel and would be evaluated based upon the QC findings when they become available.

Engineering personnel performed a walk-through inspection specifically to observe the condition of other QC inspected springnuts and found that similar conditions exist. As a result, engineering is now performing an analysis to determine the significance of these findings relative to the need for rework. The results of this analysis will be reviewed by the inspector and is identified as Inspector Followup Item (390/86-14-06; 391/86-14-05).

Within this area inspected, two violations were identified.

12. Reactor Coolant Pressure Boundary Piping (Welding) - Observation of Work and Work and Activities (55073C)

a. Applicability Of ASME Section XI On Unit 1 Rework Activities

The licensee is presently rerouting a large portion of the instrumentation tubing on Unit 1 to satisfy slope requirements. The inspector reviewed this activity with the lead engineer in the licensee's Modification Group to determine compliance with licensee commitments and applicable ASME Code requirements. In addition, the inspector performed visual inspections in the field regarding the instrumentation line replacement. The inspector noted that the rework is being performed in accordance with the rules of ASME Section XI and questioned the licensee regarding the applicability of the ASME Section XI Code being used at a construction site. The licensee advised that ASME Section XI is applicable to perform this activity based on the following:

- (1) Paragraph IWA-1200 of ASME Section XI states "The jurisdiction of this Division (Section XI) covers individual components and complete power plants that have met all the requirements of the Construction Code, commencing at that time when the Construction Code requirements have been met." The licensee advised that completion of the ASME Section III Field Installation Weld Data

Report Form (N data package) constitutes completion of the Construction Code. On Unit 1 the N data packages are complete and signed off by the Authorized Nuclear Inspector. Therefore, it is their position that ASME Section XI is the applicable code for reworking the instrumentation lines.

- (2) Preliminary reviews made by the inspector found at least two areas of Section XI that have less restrictive requirements than Construction Code, Section III. An example: Section XI paragraph IWA-4400(b) (5) exempts piping and associated valves that are one inch nominal pipe size and smaller from hydrostatic testing. Further, Paragraph IWA-7310 states, "The construction of replacements shall be in accordance with the Construction Code or other requirements established under the provisions of IWA-7200 unless the replacements are specifically exempted by IWA-7400 from the requirements of this article". IWA-7400 states, "Piping, valves, and fittings one inch nominal pipe size and less, except that material and primary stress levels shall be consistent with the requirements of the applicable Construction Code".
- (3) The instrumentation lines are less than one inch nominal pipe size and therefore are exempt from the construction rules except as stated above.
- (4) The inspector advised the licensee that several concerns exist regarding the use of Section XI rules for the Unit 1 rework activities and are noted as follows:
  - (a) Unit 1 is not an operating plant and the applicant has not certified that it is ready for an operating license.
  - (b) Numerous employee concerns exist regarding the adequacy of construction. The N-5 data packages and program are also being questioned based on employee concerns. It is not clear that construction is complete until all construction issues are resolved.
  - (c) Section XI exempts piping of this size from construction rules. ASME Section III does not exempt this size piping. Therefore, hydrostatic testing is not exempt. Also, the Authorized Nuclear Inspector is not exempt under Section III rules. They are exempt, except material verification, under Section XI rules.

Based on these concerns this item is unresolved pending further discussions within the NRC and with the licensee on this issue. This will be identified as Unresolved Item (390/86-14-07).

b. Code Applicability On Unit 2 Construction

A review by the inspector of nonconformance report (NCR) 6562 resulted in the following unresolved issues relative to Unit 2 construction:

- (1) Nuclear Construction Issues Group (NCIG), NCIG-02 is a sampling plan for visual reinspection of welds covered under the American Welding Society (AWS) AWS D.1.1. It presently is not approved for use in ASME applications. Based on the above referenced NCR and a June 20, 1986 letter to the NRC on this subject, NCIG-02, Revision 0, was applied on Unit 2 for the selection and disposition of ASME pipe welds. Use of NCIG on AWS or ASME welding requires specific approval from the NRC. To date this has not occurred for Unit 2.
- (2) ASME Section XI is referenced on the NCR as the applicable code for evaluation indications found by a sample selection. As allowed by both Section III and Section XI the applicability of Section XI only takes effect after all construction has been completed. At this time only a small number of systems have been completed on Unit 2. Therefore, Section III is the applicable Code for evaluation and disposition of rejectable indications.

This item is identified as Unresolved Item (391/86-14-06) pending licensee disposition of these issues.

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

13. Safety Related Structures (Welding) - Observation of Work Activities (55063C)

The inspector reviewed portions of the licensee's Weld Evaluation Project (WEP) which was contracted to the Department of Energy (DOE) and EG&G Idaho Incorporated. The program is designed to perform a comprehensive and independent evaluation of the licensee's welding program with respect to Unit 1 safety related welds performed by licensee personnel.

The inspector held numerous discussions with personnel from the licensee, DOE, and EG&G relative to this activity during this inspection period. In addition, the inspector accompanied the EG&G inspector in the field to witness inspections of welds. The methodology and acceptance criteria used to perform these inspections was discussed with the licensee and EG&G personnel. In addition, the inspector reviewed nondestructive examination procedures to determine their technical adequacy and compliance with code commitments. The procedures reviewed are listed as follows:

- WEP 3.2.4, "Liquid Penetrant Examination Methods and Acceptance Criteria."
- WEP 3.2.5, "Dry Magnetic Particle Examination Methods and Acceptance Criteria."

- WEP 3.2.6, "Radiographic Examination Methods and Acceptance Criteria (For Film Interpretation Only)."

All procedures and areas reviewed by the the inspector were found to be technically adequate and no discrepancies were identified.

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