UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323

Report Nos.: 50-390/92-05 and 50-391/92-05

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: February 21 through March 19, 1992

Inspectors: _____ 4/17/92
G. A. Walton, Senior Resident Inspector Date Signed
Construction

P. G. Humphrey, Resident Inspector, Watts Bar
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J. F. Lara, Resident Inspector, Watts Bar

Approved by: _____ 4/17/92
K. P. Barr, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope:

This routine resident inspection was conducted in the areas of resumption of construction activities, cable installation, work control closure packages, corrective action program implementation of conduit supports, and action on previous inspection findings.

Results:

Construction activities continue to progress under the slow monitored restart program. In-progress modification work activities were observed to be of good quality. Some deficiencies in procedure adequacy and procedure compliance continue to be found.

One violation was identified pertaining to inadequate scaffolding and rigging procedures (Paragraph 3.c). This issue had previously been identified as an unresolved item in IR 390, 391/92-01.

One inspector followup and two unresolved items were identified as a result of an NRR audit of the Cable Issues CAP. These are: (1) EQ report signatures, paragraph 7.a; (2) cable tray walkdown inspections, paragraph 7.b; and (3) soil thermal resistivity for underground duct banks, paragraph 7.b.

Two other inspector followup items were identified concerning (1) control of breaklinks, paragraph 5; and (2) undersized fillet welds, paragraph 6.

One issue concerning late entry signoffs will be followed-up as part of the licensee's response to Violation 50-390/92-01-02, (Paragraph 3.b).

One unresolved item and one inspector followup item were evaluated but require further review to determine acceptability, paragraph 8.

Two construction deficiency reports, one unresolved item, two inspector followup items, and one violation were evaluated and closed during the reporting period, paragraph 9.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

T. Arney, QA Manager
L. Bush, Operations Superintendent
S. Casteel, Operating Experience Manager
*J. Chardos, Manager of Projects
*J. Christensen, Site Quality Manager
S. Crowe, QC Manager
*J. Cruise, Licensing Engineer
*B. Elam, Modifications/Construction Superintendent, ECI
*W. Elliott, Engineering Manager, Nuclear Engineering
*J. Garrity, Site Vice President, Watts Bar
R. Hagerman, Senior QC Supervisor, Stone & Webster
*L. Jackson, Operations Manager
*R. Johnson, Modifications Manager
*N. Kazanas, Vice President Completion Assurance
*R. Lewis, QA Records Project Manager
*D. Malone, QE Manager
A. McLemore, Modifications Engineering Manager
C. Nelson, Maintenance Support Superintendent
P. Pace, Compliance Licensing Supervisor
G. Pannell, Site Licensing Manager
*R. Purcell, Plant Program Manager
T. Raley, Modifications Shift Engineering Supervisor
K. Stinson, TVA Project Manager
*S. Tanner, Special Projects Manager
*C. Touchstone, Licensing Engineer
H. Weber, Engineering and Modifications Manager
D. White, Ebasco Site Construction Manager

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

*Attended exit interview held on March 19, 1992

Acronyms used throughout this report are listed in the last paragraph.

2. Resumption of Construction Work

The NRC concurred with the resumption of WBN construction restart activities on November 22, 1991, and confirmed that decision by letter dated November 26, 1991, after evaluation of the licensee's programs and recurrence controls. However, stipulations were added that the licensee inform the NRC resident inspection staff, before the fact, of those work packages selected for implementation and any changes proposed

for the processes, procedures, organizations, and controls which constituted the baseline for the restart activities. Changes that could significantly change the way work is performed, alter the criteria for work, or reduce the effectiveness of work controls were to be coordinated with the NRC prior to implementation.

The inspector reviewed the licensee's actions with regard to compliance with the restart criteria during this inspection period. This review included those checklists established by the licensee for proposed changes to ensure that the change did not reduce the effectiveness or quality of the baseline established.

The licensee presented 15 checklists for procedure revisions and 5 process changes that affected the method work activities were being accomplished. The resident inspectors' review of these revisions and process changes determined they did not significantly change the methods approved by the November 22, 1991, restart criteria. One additional procedure change to QAI 10.03 Material Sanitization Program was proposed by the licensee during the inspection period and is under review.

3. Construction Work Activities

Documentation reviews of WPs, MRs, and WOs were performed by the inspectors in addition to field inspection of work activities to verify that work was accomplished in accordance with approved procedures. The reviews and observations included verification that work approvals were obtained, adequate work instructions were included (including special processes), hold orders were identified (where applicable), QC holdpoints were identified, drawings and procedures were current, materials were staged, and craftsmen were trained for the work activities. Pre-job briefings for work activities held between the field engineers and craft personnel were attended by the inspectors to ensure that each was comprehensive.

The following WPs were reviewed during this reporting period:

a. Pre-job Briefings and Work Activities

- WP D-08413-01, Rework Cable/Conduit, Remove and Reinstall Cable

  As previously described in IR 390, 391/92-01, the scope of the WP included the removal and installation of new cables. During this inspection period the inspector continued in-progress inspection of the associated work activities.

  Cable pull calculations were generated prior to installing the cables through the designated conduit segments. The inspector verified that these new calculations provided the correct pull tension limits for the cables to be installed. Conduits were properly lubricated prior

to installing cables and appropriate breaklinks were used to ensure that cable pull tension limits were not exceeded. Other activities observed included the splicing of cables routed through junction box JB3410A. The proper use of Raychem material splice kits was verified.

The inspector observed craft, field engineers, construction engineers and QC inspectors during the implementation of the WP. The inspector reviewed the in-progress documentation of the work activities in the WP package. The proper control of breaklinks was also verified during this inspection. (See Paragraph 5. for further discussion of breaklink controls).

The inspector did not identify any deficiencies during the inspection of these work activities. Work control measures were determined to be adequate.

- WP D-09168-01, Rework Cable

This WP pertained to the removal and installation of cable 2V2510B routed from junction box 1-JB-292-643-B to valve 2-FCV-70-14-B. The WP was written to implement the corrective actions described in DCN M-09168-A.

The inspector observed the installation of the new cable routed within conduit 2VC641B. Cable pull calculations were also reviewed at the work location in the auxiliary building. The monitoring of the pull tension was expected to be through the use of a dynamometer. However, the cable was able to be pushed through the short conduit length and therefore monitoring was not required. Personnel observed to be at the work location included craftsmen and superintendent, field and construction engineers, and QC inspectors. In-progress documentation of the work activities was observed to be in accordance with procedural requirements.

The inspector did not identify any deficiencies during the implementation of this WP. The work activities were observed to be in accordance with site procedures.

- WP DO5479-32 and -33, Correct Cable Separation Violations

The inspector observed the pre-job briefing held on March 5, 1992. The scope of the WP was to inspect, identify and correct cable separation violations within panel 1-PNL-68-202-1 and junction box O-JB-287-5213-S. Personnel present included craftsmen, construction and field engineers, and QC inspectors.

Following the briefing, the inspector discussed the scope of the WP with the construction and field engineers. No deficiencies were identified during the review of the WP scope.

b. Workplan Documentation

In-process inspection of WPs was performed by the inspector to evaluate the data which constitutes completion of specific work tasks, including craft and QC sign-offs. The inspector paid particular attention to sign-offs being made as "LE" (late entry) to determine whether such entries were used excessively.

The review indicated that craft personnel were entering late entries at an exceedingly high rate without any apparent justification as to why the entries were not made when the work was completed. For example, workplan D02249-03 contained seven late entries on one page where nine signatures were entered. Subsequently, the licensee performed a 100 percent overview of workplan activities for work completed since construction restart was approved. This review found approximately 30 percent of the work documents contained late entries.

The licensee has addressed the issue of late entries being abused through the issuance of a PER and the actions implemented as described below.

> "Instructions were given to on-site people that in-process signoffs are intended to be signed off as the work progresses past that point and not at a later date. Also, at no time is it acceptable to postpone signature past your work shift. All documentation is to be up-to-date prior to your daily departure. The review of late entries found there is not a clear understanding of when nor how to properly use late entries. Late entries are to be used as a means of document correction and not as a standard operating process. This should be a very uncommon happening. As it stands approximately 30 percent of our work documents contain late entries. This is not acceptable. Any document which is not part of the population identified by PER WBPER920030 will be trended through the quality specialist review at closure to assure improvement or further action in this area. Lastly, as part of the slow monitored restart process, it is always required that the field engineering sign for acceptance prior to the quality control inspector. Although some procedures don't contain this requirement, it shall be considered a requirement until further notice".

To incorporate the above requirements, the licensee is revising SSP-2.09, Records Management, to clarify the allowable use of late entries and how the data are to be entered. These corrective actions will be reviewed by the NRC as part of the review of the licensee's response to violation 50-390/92-01-02.

c. Scaffolding and Rigging Activities

The inspector continued to review and evaluate the licensee's activities relevant to the scaffolding and rigging deficiencies which resulted in the issuance of URI 390/92-01-04 and 391/92-01-01. The issue addressed procedural deficiencies which had been instrumental in the improper erection and attachment of scaffolds to process piping and other safety related equipment. The procedure utilized at WBN was from the licensee's Nuclear Power Safety and Health Manual, NPSH-III-D-4.04, WBN Supplement, Scaffolds and Temporary Work Platforms, which implemented the guidelines specified in SSP-6.06, Operation of Overhead Handling Equipment.

From scaffolding concerns identified in the field by the inspector, an evaluation of that procedure by the licensee revealed that it failed to prohibit certain conditions that could overstress safety related equipment, such as process piping, conduits, and other plant items when attaching rigging and scaffolds. Based on the evaluation, the licensee committed to revise the procedure and to get all scaffolding in conformance with the new version. Engineering Calculation, WCG-1-1311, was performed to determine the allowable temporary rigging and scaffolding loads that could be applied to permanent plant features. The scaffolding in the plant was evaluated on the basis of the calculation and 14 scaffolds were found to be attached to permanent plant features that were outside the allowable limits. As a result, PER WBPER 920053A was issued to document the condition.

In addition, the inspector identified two process hangers, 47A450-21-303R1 and 47A450-21-308, with a portable 1 & 1/2 ton chain hoist attached to each which were being utilized to pull an 8-inch diameter stainless steel pipe into position for a weld fit-up. A third hanger was later identified by the licensee with a chain hoist attached that was also being utilized in the same manner for the subject weld. The hangers were 3-inch X 3-inch tube steel, supported only at the base, and the chain hoists were attached at a distance of approximately 20 inches from that base. The loading limits for 3-inch tubing steel that was supported only at one end could not be adequately determined from SSP-6.06 and the licensee generated a PER, WBPER920057, stating that the loads applied to the subject pipe hangers were indeterminate.

Based on the above issues, URI 390/92-01-04 and URI 391/92-01-01 are therefore being closed and the issue will be identified as VIO 390/92-05-01, 391/92-05-01, Inadequate Rigging and Scaffolding Procedures.

d. Protection Of Stored Fuel

During this inspection period, the inspector witnessed building and structures preparation for painting in the refueling floor area. This activity was occurring in the area where the new fuel is stored. Based on this observation, the inspector questioned whether the covers on the fuel pit would protect the fuel from airborne contaminants associated with the painting activities.

The licensee's manager of nuclear engineering provided a sample of the materials utilized to seal the fuel pit hatch covers to the pit structures and assured the inspectors that the protection was adequate to protect the fuel from contamination. In addition, the manager stated that the fuel inside the pit was covered with a plastic material.

The inspector had no further questions regarding the protection of the fuel from airborne contaminants.

4. Conduit Supports CAP

The licensee advised the inspector that three buildings (diesel building, additional diesel building, and the intake pumping station) were complete for the actions specified in the conduit support CAP. Specifically, the licensee stated that the critical case evaluations were complete for all the conduit supports in these buildings and the records in RIMS would reflect the engineering evaluations, the construction and inspection records, and the RIMS data would cross reference the engineering data to the construction and QC inspection records. To evaluate this effort the inspector selected three conduit supports in the diesel building and requested the licensee retrieve the engineering, construction, and QC inspection records for the supports selected, CS-DG-325, CS-DG-363, and CS-DG-364.

The licensee was successful in retrieving the engineering critical case data for all three supports. The inspector reviewed this data and compared the engineering evaluated configuration against the as-installed field conditions for the three supports. The inspector found the engineering evaluations of the supports to be very conservative. Two of the supports contained critical attributes (torsional effect) that were evaluated for effects on the unistrut support and determined acceptable. The third support did not contain any of the critical attributes requiring engineering evaluation and was found acceptable.

Regarding prior construction and QC inspection records, the licensee was not successful in retrieving the records for the three supports. After the licensee failed to locate the records on these supports, additional conduit supports were evaluated by the licensee in the diesel generator building and intake pumping station. Several support records were not

retrievable. The licensee was unable to provide an explanation for the apparent missing records. Problem Evaluation Report WBPER920083 was issued on March 18, 1992 documenting the results of the licensee preliminary findings for the diesel generator building and intake pumping station. The licensee plans to perform additional reviews of other buildings in an effort to determine the extent of condition for the missing records. Further, the licensee has completed the ASRR sample record review for conduits and from this review, all conduit records with support identification were retrievable. The licensee indicated that some conduit records were not retrievable when the support was not properly tagged for identification. The supports selected by the inspector were identified with proper identification tags.

The issue regarding record adequacy was originally opened as unresolved item 50-390, 391/86-24-03. The issue has been subsequently addressed in inspection report 50-390, 391/91-31. This item will remain unresolved pending adequate resolution of the QA record issues by the licensee. .

5. Control of Cable Pull Breaklink Material

During the implementation of WP D-08413-01, the inspector observed adequate control of breaklink material utilized to monitor the pull tension. However, discrepancies were noted with the documentation during the review of the measures established to control the use of breaklink material.

Procedure MAI-3.7, Cable Pull Force Monitoring Breaklink Fabrication, Verification and Control, Revision 1, describes the controls established to effectively control the issuance of cable pull breaklink material. The procedure requires that spools of breaklink material be tested and qualified to ensure that during their use cable pull tensions will not be exceeded. Once a spool has been tested and qualified, segments from such spools can be cut for use in future cable installations. Issued breaklinks are required to be logged to provide traceability to the tested spool and the qualifying data. These logs and breaklink material are required to be controlled by the Ebasco construction group.

The cable pull breaklink log identifies those breaklink spools which have been tested to break at a particular tension force and have been given a unique identification number. The breaklink check-out/check-in log provides traceability for the issuance of breaklink material from any specific tested spool. The breaklink logs and material are required to be controlled. During this review the inspector identified discrepancies in documentation of tested and issued breaklink material. Discrepancies are described below.

a. The log sheet for the breaklinks which have been tested and qualified incorrectly identified four breaklink spools as 90-122-173. This entry is incorrect in that this unique ID number should not have been entered at all since this ID number corresponds to spools tested

prior to the 1990 stop work order. This spool was tested during the implementation of dummy WPs in November 1991 and the correct number which should have been identified on this log, as designated on the spool itself, should have been 91-85-001 since it was tested and qualified to break at 85 pounds or less.

b. The same log contained an entry for the above spool identified as 91-85-001 but the entry was lined-thru indicating to the inspector that such a spool did not exist or was no longer qualified. This spool was nevertheless maintained in storage lockers as ready for use. The inspector questioned why a spool could be identified with an ID number and ready for use but yet not be documented in the log as a qualified spool.

c. The breaklink check-out log also identified two breaklinks issued from spool 90-80-134. This spool is not listed in the breaklink log as having been tested and qualified and therefore breaklinks from this spool should never have been issued. According to the log, breaklinks 90-80-134 and 91-85-01 were both used during the implementation of dummy WP 14. Review of the WP document indicated that only breaklink 91-85-01 was actually used during the cable pull.

d. The inspector observed that all breaklink spools, whether qualified or not, were stored in two locked file cabinets. However, they were all stored with no detectable effort to segregate those spools which had been tested and qualified from those which had not been.

The above discrepancies led the inspector to conclude that the present controls are not yet being effectively implemented. It should be noted that the questionable documented spools were only used during the implementation of non-safety related dummy WPs. The inspector also noted that both these logs are not required to be retained for any period of time. Records required for lifetime retention are the data sheets which document the testing and qualification of particular spools. The lack of retention requirements for the logs will make it difficult in the future to readily determine where particular spools were used.

The discrepancies associated with the breaklink logs were first brought to the attention of Ebasco personnel on February 28, 1992, by the NRC resident inspector. On March 3, 1992, the resident inspector also discussed these issues with the licensee's modifications group. The inspector expressed concern that such discrepancies indicated weaknesses in the implementation of MAI-3.7 procedural requirements which should be addressed in a prompt manner to ensure that: 1) no unqualified breaklinks were inappropriately used in safety-related WPs; and 2) individuals are made aware of procedural requirements prior to further issuances of breaklinks to remove the possibility of installing cables with unqualified breaklinks. On March 4, 1992, the inspector met with Ebasco personnel to discuss planned corrective actions to address the discrepancies. On

March 12, 1992, the licensee initiated PER WBPER920077 to document the discrepancies associated with the identification and logging of breaklink spools. This PER was initiated 13 days after personnel were first informed of the discrepancies by the resident inspector. The inspector expressed concern to the licensee regarding the delay in documenting the discrepancies on a PER since the discrepancies at the time of the PER issuance were the same as when the issues were first identified. Licensee management acknowledged the concern and stated that even though they were not sure a PER condition existed, they issued one. The delay in issuance was caused by the question of whether the PER condition existed.

Corrective actions include correcting the inconsistent and incorrect entries on the breaklink logs to reflect the qualified breaklink spools and the breaklinks which have been issued for use. Personnel were retrained to the breaklink control measures specified in MAI-3.7. Ebasco management issued an administrative directive to provide additional guidance regarding the application of MAI-3.7 and to designate responsibility for control of breaklink material. Qualified and non-qualified breaklink spools have now been segregated to ensure that only qualified breaklinks are issued. In addition, WR C096086 has been initiated to test and qualify the remaining non-qualified breaklink spools.

The inspector concluded that the above corrective actions adequately address the identified discrepancies. However, implementation of these corrective actions will be reviewed during future NRC inspection activities. Therefore, this issue will be tracked as IFI 50-390/92-05-02, Control of Breaklinks.

6. Welding Issue On Undersized Fillet Welds

TVA identified a problem to the resident inspector regarding the licensee's failure to repair certain previously identified welds which were determined to be over-stressed. This deficiency was originally reported to the NRC pursuant to 10 CFR 50.55(e) as items 50-390, 391/81-01 on December 10, 1980. The licensee's final report states that 14 cable tray welds were found to have inadequate weld size when subject to the forces calculated in the original design. Five of the 14 welds were found to be stressed within allowable limits while nine were found to be over-stressed. The nine welds identified as over-stressed required additional welding.

During the licensee's review of commitment verification for open item report OILV-3145 R/2, it was found that the welding had not been completed. The commitment documented that the nine welds are required to be repaired before fuel load. In addition, the licensee's recent review identified a discrepancy in that there are actually 18 weld joints identified in the calculation as inadequate. Seven were found to be

stressed within the allowable limits and 11 were found to be over-stressed requiring additional welding. The licensee identified that the CDR, ECN, and NCR were closed based on the welding being complete and the as-built drawing being updated and issued. However, the welds were never repaired.

On January 27, 1992, the licensee issued a PER (WBPER920019) identifying the deficiency and tracking the item to closure.

This issue is unresolved (URI 50-390/92-05-03 and 50-391/92-05-02, Undersized Fillet Welds) pending evaluating of the licensee's root cause evaluation and proposed corrective actions.

7. Cable Issues CAP

During the March 1992 NRR audit pertaining to the Cable Issues CAP, various items were identified which require inspector follow-up to track resolution. The items are discussed below.

a. Cable Pullby Issue

Brand Rex LOCA Qualification Final Test Report (Job Number 91-0251), Revision 2, documents the environmental qualification for Brand Rex cables installed at WBN. The NRC noted numerous pages which contained late and out-of-sequence signatures on pages which documented data recordings. Examples are specified below.

- Page 4 contained an "Entered by:" signature dated December 11, 1990, while the "Witnessed and Understood by:" signature is dated May 1, 1991.

- Pages 46-48 contain an "Entered by:" signature dated May 2, 1991, while the "Witnessed and Understood by:" signature is dated May 1, 1991.

The licensee issued PER WBPER920067 on March 5, 1992, to document and evaluate this discrepancy. Resolution of this issue will be tracked as an IFI 50-390/92-05-04 and 50-391/92-05-03, EQ Report Signatures.

b. Ampacity Issue

(1) During the NRR audit, the NRC identified an installed cable tray cover (for one out of ten trays selected for inspection) which varied in length from that documented during previous licensee walkdowns. Similar conditions had previously been identified and evaluated by the licensee. Cable tray cover lengths affect the ampacity calculations in that cables are not derated for

installed tray covers when their lengths are less than 6 feet. To determine whether these conditions are isolated, the licensee has included 11 cable trays (selected by NRR) for future inspections to determine the actual installed tray cover length. These trays have been identified by the licensee as being between 5 and 6 feet in length. These cable trays will be inspected as part of the Walkdown Verification Program initiated to provide further confidence in the walkdown information. The cables tray cover segments selected for inspection are:

Node Voltage	To	From
3A	2202	2225
3A	2207	2230
3A	2429	2533
3B	256	257
3B	372	373
3B	2424	2452
4B	2382	2418
4B	2383	2421
5A	2046	2047
5A	2237	2238
4A	2067	2154

This issue is unresolved (URI 50-390/92-05-05 and 50-391/92-05-04, Cable Tray Walkdown Inspections) pending evaluation of the licensee's walkdown results.

(2) Ampacity calculation WBPEVAR9003002, Cable Temperature Calculation of Auxiliary Power Cables in Underground Duct Banks, Revision 0, evaluates the ampacity of installed cables routed in underground duct banks. The NRC noted that the assumed soil thermal resistivity value may not be appropriate due to the composition of the soil. The licensee plans to re-evaluate the calculation and associated inputs to provide additional justification for the assumed soil resistivity value of 90, provide alternate analysis, or establish a program to test soil samples for actual soil resistivity.

This issue is unresolved (URI 50-390/92-05-06 and 50-391/92-05-05, Soil Thermal Resistivity for Underground Duct Banks) pending the licensee's evaluation.

c. Vertical Supports

The NRC concluded that the licensee's evaluation of cable vertical supports did not provide sufficient basis for the use of Raychem sleeves in condulets and tie wraps in junction boxes as mechanisms for providing vertical support. On March 13, 1992, the licensee issued SRN-G-38-133 to G-38, Installation, Modification, and

Maintenance of Insulated Cables Rated Up to 15,000 Volts. The SRN provides changes to the G-38 specification to incorporate the NRC concerns. The inspector had no further questions on this issue.

8. Actions on Previous Inspection Findings (92701)

a. (Closed) IFI 50-390, 391/91-08-01, Resolution of SCAR WBP910017SCA

This IFI was opened to track the licensee's resolution in establishing a means to prevent the institution of internal and unofficial policies that deviate from formal procedures regarding management reviews prior to the initiator obtaining a CAQ number.

SCAR WBP910017SCA, issued January 6, 1991, identified numerous CAQs that were apparently not issued in a timely manner. This SCAR was subsequently invalidated on the basis that TVA was unable to prove that an in-house policy actually existed that required the initiator to obtain his supervisor's signature or approval on the CAQ before obtaining a CAQ number. TVA's investigation of the issue did confirm that CAQs remained unissued for extended periods of time, but it was not proven that the reason was due to an in-house policy. Regardless of the reasons for not issuing CAQs in a timely manner, the licensee recognized the need to address and correct the deficiency. The licensee has included a statement on SCAR WBP910017SCA that no proof was provided through the investigation to substantiate that the in-house policy was the cause for untimely issuance of CAQs. The review did not rule out the existence of procedure violations. Other issues on the invalidated CAQ were addressed in CAQ WBN900602SCA.

The licensee's corrective actions to resolve the concern were identified in the issues of inadequate work control. The SCAR WBP910017SCA states:

> "The work control issues being addressed by WBN900602SCA generically include issues such as timeliness, failure to follow procedure, inadequate procedural guidance, lack of management attention, personnel training, etc. Many actions were being taken and/or had already been taken to address these issues. Specifically, some actions which address recurrence controls which have been put in place to ensure all adverse conditions are identified and initiated in a prompt manner are memorandum (RIMS) T19 910129 832 and C24 910114 605 which stress the importance of documenting all potential adverse conditions promptly. Also WBN's Vice President's Watts Bar Dispatch, Volume V, Number 73, dated November 11, 1990, was issued to all TVA Watts Bar employees and stressed that it was not management's intention to discourage filing of CAQs when the issue of concern represents a legitimate use of the CAQ process.

Since stop work order WB90-01 was issued on December 21, 1990, Watts Bar has reconstructed all work controlling documents per WBN900602SCA to place stringent requirements on the work control process. The procedure for initiating potential adverse conditions, SSP-3.06, Revision 4, Problem Evaluation Reports, stresses the importance of all individuals promptly identifying and reporting problems. The procedure specifically states that individuals shall identify problems within one working shift. Also, it is required to document dates of occurrence and method of discovery at the time of initiation. This will provide a means of identifying and documenting untimely initiation of adverse conditions. Additionally, the new SSP-3.06 PER process is structured to where the initiator obtains the PER number prior to processing it through his supervisor."

During the NRC restart team inspection documented in IR 50-390, 391/91-29, the inspector discussed the issues associated with this IFI with licensee management and actions were initiated by the licensee to revise the SCAR to adequately and accurately represent the issues and circumstances and to show that actions had been taken to prevent recurrence. Several meetings were held on this subject during the team inspection with the following findings.

Although this SCAR was invalidated, the inspector determined that recurrence control actions had been taken by the licensee as follows:

- Procedural changes have been implemented, including defining "prompt" initiation of a CAQ as one working shift.

- Management expectations for procedural compliance, including prompt initiation of CAQs, were strongly emphasized to WBN employees in a memorandum from the site vice president dated January 17, 1991. This memorandum stated that procedures are to be followed as written, and any management direction to the contrary would not be tolerated. This memorandum specifically included prohibiting, delaying, or discouraging CAQ initiation by subjecting potential CAQs to informal management reviews outside the requirements of procedures. Similar letters were issued by QA and NE management.

From the extensive reviews performed during the team inspections and subsequent inspections performed by the NRC resident inspectors, it was found that prior to the stop work initiation, delays had occurred from the time the nonconforming conditions were found until the CAQ number was issued; however, the problem was more prevalent than just management delaying issuance of a CAQ number, but generically include issues such as timeliness, failure to follow procedure, inadequate procedural guidance, lack of management attention, and personnel training. The licensee has addressed the generic aspect of these problems with the corrective action program and implemented overviews to monitor the effectiveness of the actions taken during the stop work.

Both SMRC and QA have been conducting significant reviews beyond the procedural requirements including SCAR and FIR corrective action plans and PER initiations, invalidations, and corrective action plans. Extra QA review and oversight includes review of PER initiations, proposed corrective action plans, and closures. Additionally, the licensee has implemented a QA program called 12-6-3 Review. The 12-6-3 Review is a monthly review consisting of a horizontal review of 12 SCARs or FIRs, a vertical review of 6 SCARs or FIRs, and a closure review of 3 SCARs or FIRs. Selected CAQs are also reviewed during quality monitoring activities.

The inspector found that the current level of QA and SMRC involvement is providing assurance of adequate implementation of the CAP.

As documented in NRC IR 390, 391/91-24, an incident investigation identified two examples where a CAQ was not promptly initiated when adverse conditions were identified.

The licensee took the following measures to prevent recurrence:

(1) To reinforce management expectations for procedure compliance and prompt initiation of CAQs, a "Corrective Action Program Lessons Learned" site dispatch was issued November 14, 1991.

(2) To preclude potential timeliness problems resulting from a lack of employee awareness, the site dispatch also provided clarification as to when to issue a PER instead of utilizing one of the other ACPs.

As documented in IR 50-390, 391/91-29, the team found that since the stop work order went into effect, significant procedural upgrades have been made to address timeliness of corrective action initiation. Timeliness criteria have been clarified and improved. Program procedures require any individual who discovers an adverse condition to initiate the appropriate CAQ document within one working shift of discovery. Three days are allowed for supervisory reviews of FIRs, PERs, and SMRC review of SCARs counted from the day of initiation. Following the supervisory reviews of FIRs and PERs, these documents are submitted to the SMRC. The SMRC monitors submittal times and holds line managers responsible for timely performance of this review. Late management review items are automatically scheduled for the next SMRC meeting. The responsible manager must appear before the SMRC to present the adverse condition and justify why the item was late.

The new program requires that when the validity of the CAQ is uncertain, it shall be promptly documented on a PER to assure timely attention to operability, reportability, and necessary corrective actions.

The date of occurrence and how the adverse condition was discovered is procedurally required to be addressed in the description of the adverse condition at the time of initiation. The line supervisor must verify this is included. This attribute is used to determine current program/process problems versus "old" problems just now being discovered but also enables timeliness of CAQ initiation to be monitored.

Additionally, the inspector reviewed the licensee's performance after restart of construction work activities regarding prompt issuance of nonconformance reports and found that generally PERs were assigned a number during the working shift that the problems were identified. One case was noted where two separate organizations thought the other organization was going to write the PER which resulted in neither organization issuing it within one shift; however, this was identified by the licensee and corrected.

TVA acknowledged deficiencies in the corrective action program and addressed these deficiencies during the stop work period.

This IFI is closed based on the licensee's corrective actions taken and the inspector's pre and post restart construction inspections. The inspector found the licensee has adequately addressed and corrected any concerns about withholding or delaying issuance of nonconformance reports and if, in fact, it was occurring before restart of construction, the licensee has taken actions to stop it by informing all on-site personnel that nonconforming conditions are to be issued in a timely manner and not delayed from issuance. Further, from on-site inspections and personnel interviews, the inspector was unable to find any potential nonconformances that were not issued and addressed by the licensee.

b. (Closed) VIO 50-390/90-24-01, Failure To Follow Procedure

VIO 50-390/90-24-01 identified three examples of failure to follow procedures: (1) failure to tag work activities as required by procedure, (two examples); and (2) failure to identify incorrect wiring terminations on a nonconformance report. The licensee admitted the violation occurred as stated and took corrective actions as follows:

(1) This example of the violation identified that on September 14, 1990, the inspector identified seven installed cables that had been previously cut apart in a junction box without any identification on the cable or junction box that indicated authorized, unfinished work on the cable was in process. The licensee acknowledged that CPI 8.1.8-E-102, Installation of Low and Medium Voltage Power, Control and Instrumentation Cables, and AI-8.8, Control of Modification Work After Transfer, both contained requirements for temporary tagging of the in-process

work. Additionally, the licensee acknowledged that the procedure was not followed and the in-process work tag was not installed.

(2) This example of the violation identified that on September 15, 1990, the inspector identified a main steam generator pressure transmitter, previously installed by craft persons and accepted by quality control, which was electrically disconnected from its source such that it could not perform its intended function and was not tagged or otherwise identified to indicate that authorized work had occurred on the pressure transmitter. The licensee acknowledged that the violation occurred and attributed it to the misinterpretation by craft people of AI-8.8 in that the procedure did not clearly specify in-process work tagging requirements, including tagging of temporary alterations to a plant system.

(3) This example of the violation identified that on July 25, 1990, the inspector found that licensee personnel had not properly documented (through a CAQ) a deficient condition in which the actual plant wiring configuration did not match the current approved wiring diagram for the 480 Vac Control and Auxiliary Building Vital Board 2B1-B, Compartment 4E. The licensee acknowledged the violation occurred due to oversight of the craft and QC inspector failing to initiate a CAQ documenting the nonconformance. The hardware deficiency was corrected by revised WP KMO-8515 A-1.

To initiate corrective actions on the subject violation, the licensee issued nonconformance reports SCAR WBN 900464PSCA and PRD WBN 900485P. Further corrective actions were taken by the licensee on December 21, 1990, when TVA stopped construction work activities due in part to the above violation findings, subsequent findings identified in NRC IR 90-30, Work Control, and IR 90-31, Corrective Action Program. As a result of the stop work order, TVA initiated a comprehensive review of the work control process and associated documentation, including the corrective action program. The reviews include in-process WPs in work status as of December 21, 1990. This review (referred to as safety net review) is required to be completed prior to restarting any work on the affected hardware until the workplan review is complete as specified in SSP 7.c Rev 1, Safety Net Review Process. Walkdowns to identify work status and tagging requirements are done to facilitate the actual work status of the hardware versus the associated documentation.

Additionally, the site has implemented a comprehensive training and certification program for construction and craft personnel. The program includes training addressing the tagging requirements for the identification of in-process work.

The inspector concluded that the licensee's corrective actions for this violation were acceptable. CAQ PRD WBN900464P was issued on October 16, 1990 to document the identified deficiencies.

WBN900464P documented the following conditions:

Item 1: Failure to follow work procedures while lifting cables.

Item 2: Failure of both QC and construction personnel to initiate a CAQ at the time the discrepancy occurred.

Item 3: Terminal lug damage and/or improperly sized lugs.

Item 4: Failure to issue a CAQ on the terminal lug damage.

During the NRC team inspection, documented in IR 50-390/91-29, the team met with licensee personnel on several instances to determine if all issues and proper corrective actions identified had been addressed. The team concluded that the corrective actions were not complete and therefore recurrence controls were evaluated to determine acceptability of construction restart.

The licensee's evaluation and resolution of WBN900464P was determined to be poorly documented and created much confusion in attempting to verify adequate corrective actions. The corrective action process for this CAQ is described below.

WBN 900464P was originally closed on December 5, 1990, but only addressed the hardware issues (Items 1 and 3).

WBP910016SCA was written to document the failure of addressing the work control issues (Items 2 and 4) and Item 5. Item 5 was a new issue pertaining to an ECP file which was included in the original closure of WBN900464P. The closure of WBP910016SCA consisted of three corrective action steps.

- Step 1 addressed Item 5.

- Step 2 presented logic used to address Item 4 but failed to obtain Nuclear Engineering evaluation of the specific item.

- Step 3 addressed Item 2 as a generic work control issue (failure to follow procedure) which was to be addressed in SCAR WBN900602SCA. This corrective action step also mentioned the training requirements being implemented as part of WBN900602SCA.

Supplemental information dated November 20, 1991, was appended to SCAR WBP910016SCA which clarifies where all of the issues discussed above are to be addressed. The supplement also included an Item 6. Item 6 pertained to the disposition of Step 2 logic used in the closure of WBP910016SCA. Although WBP910016SCA was still active,

WBN900464P was reopened to also address Item 2 above. This created confusion of which document would address and resolve Item 2. Each item was being addressed by different individuals which created further confusion and duplication of effort.

Another CAQ (WBP910094PER) was initiated to address the engineering evaluation of Item 6. WBP910016SCA and WBP910094PER closed Items 4, 5 and 6 and included Item 2 in WBN900602SCA. Therefore, since WBN900464P had been reopened, Items 1, 2 and 3 were left to be addressed and all incorporated into WBN900602SCA. Although Items 1 and 3 had already been corrected in the field through the closure of WBN900464P, documentation was planned to be resubmitted and re-evaluated by WBN900602SCA.

Final disposition of the six items are as follows: Items 1, 2, and 3 are now encompassed in WBN900602SCA. Items 4, 5, and 6 were addressed and closed in WBP910016SCA and WBP910094PER.

The inspector reviewed the referenced CAQs and verified that corrective actions and actions to prevent recurrence were addressed. CAQ WBN900602SCA is still open and being addressed by the licensee. The inspector concluded that the items have been adequately evaluated with appropriate corrective actions. Therefore, this item is closed.

c. (Open) IFI 390/86-24-05, Use of KAZ Actuators Vice Fuses in Control Circuits - Master Fuse List Special Program

This item pertains to the inappropriate use of Bussman KAZ actuators as protective fuses in 120 Vac and 125 Vdc control circuits. This item was reviewed in IR 390/87-13 but was left open due to incomplete information regarding root cause determination and incomplete corrective action. This issue was first documented in SCR SCRWBNEEB8652. The SCR was subsequently reviewed and determined to be of significance and therefore was converted into SCAR No. SCRWBNEEB8652SCA.

KAZ actuators are designed to be used in parallel with main fuses to provide blown fuse indication. The actuator contains an end pin which is spring actuated to eject when it blows open. When the pin is ejected, it actuates a miniature switch which closes a signal circuit to provide annunciation that the main fuse has blown. The manufacturer of the KAZ actuator devices has indicated through correspondence that KAZ actuators are capable of carrying a continuous current of 5 A. However, for currents between 5 and 15 A, temperature problems can be experienced which may cause the KAZ tube material to burn. Although these devices are only designed to function as actuators, the licensee installed these to function as actuators and protective fuses. DCN P-03388 describes the corrective actions necessary to resolve the issue of misapplication of KAZ actuators.

Calculation WBPEVAR8906013, Replacement of KAZ Actuators With FLAS-5 or MIS-5 d.c. Fuses, Revision 1, documents the methodology of locating the installed KAZ actuators. The licensee's evaluation included review of schematic and connection drawings to identify the panels and circuits which have KAZ actuators. The calculation identified those KAZ actuators which were properly used as indicating devices and those which were incorrectly used as protective fuses. The licensee identified the KAZ actuators installed in Unit 1 circuits, common circuits and Unit 2 circuits required for safe shutdown of Unit 1. To resolve this issue, Bussman KAZ actuator devices installed as protective fuses in Class 1E 120 Vac and 125 Vdc circuits are to be replaced with Littelfuse FLAS-5 fuses. MIS-5 fuses are to be used in non-Class 1E 250 Vdc circuits.

Calculation WBPEVAR8907005, Verification of FLAS-5 and MIS-5 dc Fuses as Adequate Replacements of KAZ Actuators, Revision 0, documents the adequacy of replacing the KAZ actuators with FLAS-5 fuses. The inspector reviewed the calculation to determine the adequacy of the evaluation performed to support the replacement of the KAZ actuator with the FLAS-5 fuses. The inspector noted the evaluation of typical 120 Vac control circuits to establish the circuit loading. From this evaluation, the licensee determined that a FLAS-5 fuse was a suitable replacement for the KAZ actuator devices. The inspector noted that the subject calculation did not document the typical 125 Vdc control circuit loading but rather only documented the conclusion that the 120 Vac circuits were more heavily loaded. Discussions with licensee representatives indicated the typical 125 Vdc circuits which were evaluated. The licensee provided sufficient information to justify their conclusion that AC circuits were more heavily loaded than typical DC circuits.

The root cause was determined to be lack of any requirement at the time of the fused circuit design to comply with design guide DG-E18.1.3, I&C Power, which requires that protective device coordination studies be performed to ensure selectivity under fault conditions. Recurrence controls include the issuance of design criteria to control the design aspect of future fuse applications. Design criteria procedures WB-DC-30-27, AC and DC Control Power System, Revision 1, and WB-DC-30-28, Low and Medium Voltage Power Systems, Revision 1, require that provisions be made to provide coordinated interrupting devices in order to protect electrical equipment from overloads and faults.

The licensee has replaced the installed Unit 1 KAZ actuator devices except for applications where properly used for blown fuse indication. These applications consist of KAZ actuator devices in parallel with main fuses to provide indication when the main fuses have blown. The remaining work activities include the replacement of KAZ actuator devices installed in Unit 2 circuits required for the safe shutdown of Unit 1. The inspector reviewed DCN M-08853-A which

has been issued to require the use of the MFL for fuse replacements. The inspector reviewed the MFL and could not identify any KAZ actuator applications other than for blown fuse indication.

The inspector reviewed procurement records for the FLAS-5 fuses. Contract No. 75508A documents the purchase requisition for the Littelfuse fuses and specifies the required specifications. The Littelfuse FLAS-5 fuses were procured as commercial grade items (QA Level II) to be installed in existing Bussman fuse blocks. Therefore, dedication of these items is required prior to use in Class 1E applications. The procurement specifications included requirements for physical and electrical attributes, time-current characteristics, tests and inspections. Physical requirements included a blown fuse indication axial pin with a maximum unblown extension of 1/10". It also required an extension force of 0.7 lb at a minimum 1/4" blown extension. Inspection and test requirements included resistance and current measurements, and measurement of the unblown pin extension. The inspector noted that the inspection and test requirements did not include measuring the blown pin force and extension length. These attributes are critical since the pin must extend sufficiently to actuate the microswitch located on the fuse block. The licensee initiated a review of documents available to determine if these attributes were recorded. After further review, the licensee was able to provide copies of auditor inspection reports which documented inspections at the manufacturer's facility. Inspection Report 1-KN (RIMS W43900830188) documented the auditor's observation that each fuse successfully tripped the microswitch attached to the fuse block when subjected to overload currents. The fuse pin extension was also measured to be greater than the 1/4" minimum requirement.

The application of replacement fuses for providing electrical penetration assembly protection was not reviewed during this inspection but will be reviewed at a later time in conjunction with the review for adequate protection for electrical penetration assemblies. This item will remain open pending NRC inspections to verify the field implementation of the KAZ actuator replacements and verification of the adequacy of the MFL in incorporating the field modifications.

d. (Closed) CDR 390/87-21, 391/87-25, Lack of Complete Controlling Design Input Requirements

This CDR pertains to the discovery that appropriate design input was lacking in several existing design input documents. This deficiency was discovered while the licensee was developing a single source DBD. Recurrence controls for these deficiencies were reviewed and documented in IR 50-390, 391/91-31.

The identified design input deficiencies resulted in the identification of design bases open items that represented potentially unacceptable safety system designs. These items were documented in CAQRs WBP871212, WBP90030, WBP890162 and WBP890163. CAQRs WBP8980162 and WBP890163 have been evaluated and closed. The other two CAQRs were converted into PERs and have been dispositioned but require licensing submittals for NRR review. These are described below.

(1) WBP871212PER - Diesel generator protective relaying schemes were not as described in the FSAR. This PER has been dispositioned to initiate a FSAR change to clarify the existing protective relaying schemes. FSAR Amendment Request 69 has been submitted to make the required changes.

(2) WBP900330PER - Block valves installed in the flow path of safety/relief valves contrary to ASME Code requirements. The licensee is requesting a relief from the code requirements pursuant to 10 CFR 50.55(a)(3). This request was submitted in a TVA letter dated February 25, 1992.

The above corrective actions to resolve these deficiencies have been completed or require NRR review of licensee submittals. These are being tracked for closure in accordance with the licensee's CAQ process. Based upon the inspector's review of the identified CAQRs and PERs, this item is considered closed.

e. (Closed) CDR 390/85-55, 391/85-52, Excessive Conduit Bends

This CDR pertains to an identified deficiency reported to the NRC pursuant to 10 CFR 50.55(e) in 1985. The condition pertained to several (37) conduits which were installed with more than 360 degrees of accumulated bends between cable pull points. The root cause of this deficiency was determined to be that the original version of G-40, Installation, Modifications, and Maintenance of Electrical Conduit, Cable Trays, Boxes, and Containment Electrical Penetrations, Electric Conductor Seal Assemblies, Lighting and Miscellaneous Systems, did not specifically prohibit the use of more than 360 degrees of accumulated bends between pull points. Revision 12 of this specification presently requires that the total conduit accumulated bends between pull points be less than 360 degrees. The licensee's letter, dated January 28, 1986, stated that the deficiency was no longer considered to be reportable pursuant to 10 CFR 50.55(e). The licensee's basis was that of the 37 identified conduits, sidewall pressure limits were exceeded in only 12 of the conduits. The licensee concluded that these cables were nevertheless acceptable based on a lack of evidence of a trend in cable insulation degradation.

In NRC IR 50-390/87-13 and 50-391/87-13, the NRC concluded that TVA had not performed a safety evaluation addressing the impact of the failure of the identified cables based on plant safety. As a part of the response to the NOV, TVA committed to further evaluate the issue. By letter June 22, 1988, the licensee requested that the NRC close this CDR and combine the SWBP concerns with other cable concerns identified in CDRs 50-390/82-80 and 50-391/82-76 since all these issues would be resolved through the same corrective action. Although this action was requested, the NRC did not formally review the appropriateness of such action. By letter June 29, 1990, the licensee submitted a revised final report for deficiencies described in CDRs 50-390/82-80 and 50-391/82-76. The inspector verified that this CDR has incorporated the original deficiencies addressed in CDRs 50-390/85-55 and 50-391/85-52 as well as other cable deficiencies. As a result of the evaluations performed to address the deficiencies, only one (1) of the conduits contains cables for which SWBP limits were exceeded. The replacement of this cable is being tracked through the implementation of the Cable Issues CAP.

Therefore, this CDR is administratively closed for tracking purposes since the identified deficiencies in CDRs 390/85-55 and 391/85-52 have been included in CDRs 50-390/82-80 and 50-391/82-76.

f. (Closed) IFI 390, 391/90-22-06, Acceptability of Labels.

The inspector reviewed the issue and the licensee's corrective actions associated with adhesively attached labels located inside the relay covers for identification enhancements of the equipment. These were noted particularly inside the glass doors on relays located in the EDG building and were associated with the EDG equipment. The original concern was the potential for the labels coming loose and lodging in the mechanism of the devices thereby preventing them from functioning.

This review consisted of a walkdown of the subject equipment which revealed that the labels had been removed. Other areas in the plant were reviewed for this issue, but the condition was not found for those areas. In addition, a work request, MR A617444, was examined which was initiated and implemented to remove the labels. All identified deficiencies were corrected by the work request.

Based on the licensee's corrective actions, this item is closed.

g. (Closed) URI 390/92-01-04, URI 391/92-01-01, Scaffolding Procedure Deficiencies.

This item was closed based on VIO 50-390/92-05-02 and 50-391/92-05-01 which was issued during this inspection period. (See Paragraph 3.c)

9. Exit Interview

The inspection scope and findings were summarized on March 19, 1992, with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed below. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection. Dissenting comments were not received from the licensee.

Item Number	Status	Description and Reference
390/85-55 391/85-52	Closed	CDR - Excessive Conduit Bends (Paragraph 8.e)
390/86-24-03 391/86-24-03	Open	URI - Review of Retrievability and Auditability of Construction Records As Required by 10 CFR Part 50 Appendix B Criterion XVII (Paragraph 4)
390/86-24-05	Open	IFI - Use of KAZ Actuators Vice Fuses in Control Circuits (Paragraph 8.c)
390/87-21 391/87-25	Closed	CDR - Lack of Complete Controlling Design Input Requirements (Paragraph 8.d)
390/90-22-06 391/90-22-06	Closed	IFI - Acceptability of Labels (Paragraph 8.f)
390/90-24-01	Closed	VIO - Failure to Follow Procedure (Paragraph 8.b)
390/91-08-01 391/91-08-01	Closed	IFI - Resolution of SCAR WBP910017WCA (Paragraph 8.a)
390/92-01-04 391/92-01-01	Closed	URI - Scaffolding Procedure Deficiencies (Paragraph 8.g)
390/92-01-02	Open	VIO - Failure to Properly Perform and Document Work and Inspection Activities (Paragraph 3.b)
390/92-05-01 391/92-05-01	Open	VIO - Inadequate Rigging and Scaffolding Procedures (Paragraph 3.c)
390/92-05-02	Open	IFI - Control of Breaklinks (Paragraph 5)
390/92-05-03 391/92-05-02	Open	URI - Undersized Fillet Welds (Paragraph 6)

390/92-05-04 391/92-05-03	Open	IFI - EQ Report Signatures (Paragraph 7.a)
390/92-05-05 391/92-05-04	Open	URI - Cable Tray Walkdown Inspections (Paragraph 7.b)
390/92-05-06 391/92-05-05	Open	URI - Soil Thermal Resistivity for Underground Duct Banks (Paragraph 7.b)

10. List of Acronyms

ACP	Administrative Control Programs
AI	Administrative Instruction
ASME	American Society of Mechanical Engineers
ASRR	Additional Systematic Record Review
CAP	Corrective Action Program
CAQ	Condition Adverse to Quality
CAQR	Condition Adverse to Quality Report
CDR	Construction Deficiency Report
CFR	Code of Federal Regulations
CPI	Construction Process Instruction
DBD	Design Basis Document
DCN	Design Change Notice
ECI	Ebasco Constructors Incorporated
ECN	Engineering Change Notice
ECP	Employee Concerns Program
EDG	Emergency Diesel Generator
EQ	Environmental Qualification
FCV	Flow Control Valve
FIR	Finding Identification Report
FSAR	Final Safety Analysis Report
HAAUP	Hanger Analysis and Update Program
IR	Inspection Report
IFI	Inspector Followup Item
LOCA	Loss of Coolant Accident
MAI	Modification and Addition Instruction
MFL	Master Fuse List
MR	Maintenance Request
NCR	Nonconformance Report
NDT	Nondestructive Testing
NOV	Notice of Violation
NPSH	Nuclear Power Safety and Health Manual
NQA	Nuclear Quality Assurance
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OILV	Open Item Licensing Verification
PER	Problem Evaluation Report
PRD	Problem Reporting Document
QA	Quality Assurance
QC	Quality Control

QE	Quality Engineering
RIMS	Records Information Management System
SCAR	Significant Corrective Action Report
SCR	Significant Condition Report
SMRC	Senior Management Review Committee
SRN	Specification Revision Notice
SWBP	Sidewall Bearing Pressure
TVA	Tennessee Valley Authority
URI	Unresolved Item
VIO	Violation
WB	Watts Bar
WBN	Watts Bar Nuclear
WBP	Watts Bar Plant
WO	Work Order
WP	Workplan