ORGANIZATION: GE NUCLEAR ENERGY
SAN JOSE, CALIFORNIA

REPORT NO.: 99900403/87-06	INSPECTION DATES: 11/09-12/87	INSPECTION ON-SITE HOURS: 117

CORRESPONDENCE ADDRESS: GE Nuclear Energy
ATTN: Dr. Bertram Wolfe, Vice President
and General Manager
175 Curtner Avenue
San Jose, California 95125

ORGANIZATIONAL CONTACT: Mr. J. J. Fox, Senior Program Manager
TELEPHONE NUMBER: (408) 925-6195

NUCLEAR INDUSTRY ACTIVITY: GE Nuclear Engery is engaged in furnishing engineering services for domestic and foreign nuclear power plants.

ASSIGNED INSPECTOR: Robert L. Pettis JR. 2/22/88
R. L. Pettis, Special Projects Inspection Section Date

OTHER INSPECTOR(S): R. P. McIntyre, SPIS W. P. Haass, SPIS
P. Eshleman, Consultant

APPROVED BY: Udis Potapovs 2-26-88
U. Potapovs, Chief, SPIS, Vendor Inspection Branch Date

INSPECTION BASES AND SCOPE:

A. BASES: 10 CFR Part 21 and 10 CFR Part 50.

B. SCOPE: The purpose of this follow-up inspection was to review allegations involving potential deficiencies in design control activities within the Quality Assurance program at Ge San Jose, during the period March 1978 to April 1982. In addition, the status of previous inspection findings was also reviewed.

PLANT SITE APPLICABILITY: Potentially multiple plant sites, including River Bend, TVA Units 17-22 (identified by GE as cancelled), Perry 1/2, Nine Mile Point 2, Hope Creek 1/2, Grand Gulf 1/2, Limerick, Clinton, and Susquehanna 1/2.

A. VIOLATIONS:

None.

B. NONCONFORMANCES:

None.

C. UNRESOLVED ITEMS:

None.

D. STATUS OF PREVIOUS INSPECTION FINDINGS:

1. (Closed) Nonconformance (87-03-01)

Documentation was unavailable during the inspection to demonstrate GE's extending the original seismic qualification of the reactor mode switch, performed in 1978, to a 1980 revised design configuration.

GE's response to this item of nonconformance identified that the mode switch design changes were made on ECNs NJ21792 and NJ21793 dated December 15, 1980.

GE also stated that both the responsible design engineer and the independent design verifier were aware of the recommendations made earlier by the GE problem review board that a new seismic analysis be performed to qualify the switch to the new design changes. They also concluded, after an analysis that was not formally documented, that the original design verification is not affected and so noted this statement on the above ECNs. A "Memo of Record" generated during the NRC Inspection on August 4, 1987 formally documented this analysis and again concluded that the mode switch design changes did not affect the original seismic qualification. This item is closed.

2. (Closed) Unresolved Item (86-01-07)

GE Engineering Practices and Procedure (EP&P) 5.38 Addendum 4, dated December 1975, required that a tracking system and status log of deferred verifications be maintained. The inspectors verified during the NRC 86-01 inspection that the first entry was made in the status log for deferred verifications in May 1977. At that time, it

could not be determined whether verifications had been deferred before May 1977 since the status log did not contain any deferred verifications entries prior to that date.

GE provided additional documentation (several ERMs deferring verification from three separate work units within GE) that indicated deferred verification activities were initiated as early as November, 1975. Although documentation did not exist to support the inclusion of these documents into the status log, GE stated they were incorporated but subsequently transferred to the Work Planning and Scheduling System (WPSS) for scheduling and tracking to completion. The only documentation produced by GE to verify completion status of these documents was a computer run from the Engineering Information System (EIS), dated April 4, 1987, which indicated that 272 documents presently exist in the system as "U" (unverified). These documents are associated with ongoing design work in process today at GE San Jose.

GE's position was that since the drawings referenced on the ERMs were absent from this list, they must have been verified. It was also pointed out by GE that the WPSS scheduling records prior to 1980, which would have demonstrated the documents tracking status and eventual closure, have been eliminated from the system data base. As a result, documentation did not exist to support the overall tracking status of these documents including the clearing of the referenced deferred verification. In an attempt to demonstrate tracking of deferred verifications, GE committed to perform an extensive review of deferred verifications from inception through May 1977 to positively demonstrate closure of deferred design verifications. During an NRC review of this effort during the June 15-18, 1987 inspection, GE had reviewed all 15,300 Engineering Review Memorandums (ERMs) generated from inception to May 1977 to identify ERMs containing a deferred verification statement. As a result, 974 ERMs were identified which affected 3434 design documents. A computer search of these documents, performed on GE's Engineering Information System (EIS), was then used to identify the current deferred verification status of the affected documents. A DBase III computer program was used by GE to produce a list of deferred verifications based on criteria established by the NRC during a previous NRC inspection. This criteria was based on safety-related shippable components produced by GE NEBO, San Jose, for use on domestic nuclear power plants. This search produced approximately 150 design documents of which the NRC inspector selected six for further review by GE.

Inspection Finding - GE's review of the six NRC selected documents consisted of a manual search of documentation necessary to demonstrate positive opening and closing of each deferred verification throughout the history of each document. The results of this review indicated that all deferred verifications made on these selected design documents were found to be completed and closed as required. The inspectors reviewed in detail all the applicable documentation which demonstrated the opening and closing of deferred verifications throughout the documents history. This review included all revision levels of the design document and all ERMs or ECNs initiated per revision. The inspector also verified that documents were listed as complete (C) on GEs Engineering Information System (EIS). For the 6 selected design documents, all design verifications deferred during 1974-1976 were completed prior to December 1976.

Based on this review, this unresolved item is closed. Additional information concerning the review of the deferred verification system and GE's actions are presented in Section E.2 of this report.

3. (Open) Stokes Report Section 1.6

Engineering Review Memorandums (ERMs)

"In the first week of November 1978, the following line was part of an entry: Bill Millard said either he would sign the ERMs or I (Sam) could forge his signature to them." (Clarification added by Mr. Stokes.)

This item was not addressed during this inspection.

4. (Open) Stokes Report Section 1.7

Elementary Diagram Drafting Effort

"Continuing with a problem of similar nature on November 14, 1978, a letter to C. W. Hart on the subject of the CNV connection has an interesting paragraph. It seems that the CNV elementary diagram drafting effort was subcontracted to an outside firm, the Power Division of C. F. Braun & Company, in Alhambra, California. When completed, the diagrams were provided to the General Electric System Engineers for signature. The system Engineers felt that they were not being given sufficient time for review and refused to sign the documents. The documents were later signed by the C&EE CNV Engineer, without review."

This item was not addressed during this inspection.

5. (Open) Stokes Report Section 6.2

Unauthorized Signature Changes

"Mr. Milam wrote a letter to W. M. Barrentine on April 14, 1982 about unauthorized post signature changes. In this letter, Mr. Milam states that R. L. Reghitto made an authorized change to ERM AML-2997 without Mr. Milam's knowledge and in direct conflict with specific instructions."

This item was not addressed during this inspection.

6. (Open) Stokes Report Section 6.3

Letter to Management

"On May 22, 1982, Mr. Milam wrote Mr. Barrentine a letter and included a copy of his work record while working for Mr. C. L. Cobler. In this letter, Mr. Milam requested Mr. Barrentine to read about the on-going underworld of C&ID and says he tried to communicate some of these things to Mr. Barrentine on several occasions but was discouraged by Mr. Barrentine's managers and attitude. Mr. Milam says:

> Since you no longer hold my form 38 (a standard threat), I have nothing further to fear from either you or your conspiratoral managers. I hope, by sending you this Record, to give you a glimpse into that hidden world of uncontrolled bootleg activity we all know so well.

Mr. Stokes also stated that Mr. Barrentine was the manager of the Nuclear Control & Instrumentation Product Design Operation (NC&ID) of (C&ID). He was Mr. Hart's, Mr. Cobler's, Mr. Reghitto's, Mr. Strambach's, Mr. Koslow's, and Mr. Wortham's supervisor. Mr. Milam had been notified of his layoff when this last letter was written and his reference to form 38 had to do with the constant threat of layoff if you did not go along with the system. He did not."

This item was not addressed during this inspection.

7. (Open) Stokes Report Section 5.13

River Bend Excluded Equipment List

"Mr. Milam's work record included a nonapproved form titled PWA No. 1229LD, Revision 1J for River Bend. This document, which is dated February 5, 1982, was caused by an excluded equipment list which was sent to the utility, Gulf States Utilities Company, by the NRC. The second page of this document states that there is no controlled tracking system for vendor identification of these devices and that a complete item by item search of the entire River Bend database would be necessary. GE felt that the scope of such a search was prohibitive and furthermore was not considered to be necessary. Excluded equipment as referred to in this list is equipment which has been found at other facilities to be so deficient that plant safety is seriously in question. GE neither admitted nor denied that this equipment was installed at River Bend."

This item was not addressed during this inspection.

E. OTHER FINDINGS AND OBSERVATIONS:

Background Information

As stated previously, NRC Inspection Report Nos. 99900403/86-01, 87-01, and 87-03 did not address all of the allegations raised by Mr. Milam and Mr. Stokes, but rather, a representative sample of potentially more significant allegations was selected for review. However, all allegations received by the NRC are being addressed and will be documented in future inspection reports. Previously, the area of deferred design verification was addressed which represented Mr. Milam's major concerns (as noted during an NRC interview with Mr. Milam in April 1986). As stated in Section D.2 of this report, this item is closed.

1. Kaowool vs. Sand

Another area potentially affecting the protection of control room instrumentation in the event of a fire was covered in an internal GE memorandum dated May 23, 1980 with regard to the fire stop design requirements for Grand Gulf 1/2 and Clinton 1. The memorandum stated that a combination of metal barriers and Kaowool, both covered with RTV Rubber would constitute the fire break design in the control room under-the-floor cable troughs. This memorandum also indicated concern about the inability of Kaowool to fill the

cable interstices and that Kaowool may be too easily removed. The memorandum also stated that unless specific NRC approval is obtained, this design approach may be unsatisfactory.

During early discussions between GE and NRC concerning fire protection for under-the-floor cable troughs in the PGCC, one design concept that was considered involved filling the cable trough with sand. After considerable discussion of the idea in 1976-1978, all parties agreed that the potential disadvantage outweighed the benefits of using sand as a fire stop, especially considering the low risk of fire occurrence and associated damage to control room cables. Therefore, the concept of filling the cable troughs with sand was not adopted by GE and was never required by NRC. GE's current design of the fire stops is based upon test data obtained by GE during tests conducted at the University of California at Berkley. The design concepts are presented in design concept document NEDO-10466A titled, "Power Generation Control Complex Design Criteria and Safety Evaluation." This document and amendments are referenced in the FSAR's of the GE plants utilizing PGCC equipment. The criteria for the fire stop material is referenced as 3 inch minimum of a refractory material. The tests at the University of California are included as a reference in this document. The refractory material used in these tests was No. 20 sand. A refractory blanket material is currently utilized as a fire stop material in openings which do not have cables passing through the opening. However, in the areas where cables are present, an RTV foam material is applied as the fire stop material and sealant between the cable trough and is utilized throughout current plants as a fire stop. GE stated the existence of an analysis documenting the acceptability of the RTV foam material in lieu of using No. 20 sand, as utilized in the original test program. However, NEDO-10466A does not reference this alternative material. Because GE considers NEDO documents to be licensing documents only (not design documents), GE does not intend to revise NEDO-10466A to reflect the substitution of RTV foam material for No. 20 sand.

Where Kaowool had been installed, the design details were reviewed and found acceptable by the NRC. Fires that are caused by earthquakes generally involve rupture of flammable liquid and gas storage tanks and piping distribution systems. Since these hazards are not present in nuclear power plant control rooms and since these facilities are designed and constructed to resist and prevent unacceptable damage from earthquakes, earthquake-induced fires are not anticipated and are not included in the design criteria for control rooms.

The inspectors recommended that NEDO-10466A be revised to reflect the RTV foam material as an acceptable alternative to using sand for applicable plant installations. GE stated their position regarding the revision of technical licensing topical reports is: (1) as a rule, technical topical reports are not revised after they have been approved by the NRC, (2) the topical reports are not intended to provide design requirements to any design groups within GE, and (3) the topical reports provide an acceptable method for addressing a generic issue or a way of meeting an NRC staff requirement based on best available information at the time. GE stated that these licensing topicals can be referenced in specific plant FSARs as a preapproved licensing document.

The concepts and generic designs from NEDO-10466A are implemented as specific designs for each PGCC system installed in a nuclear plant. These designs are described by installation documents provided for each plant and are based upon the design calculations contained in DRF #H13-00071-1 Index 3, Titled PGCC Fire Stop RTV Silicone Foam Vol. 1 of IV. Contained within this design file is a General Electric Specification; RTV Silicone Rubber Foam Compound No. A1422-S. These specifications and design calculations provide the bases for the equivalence of the current designs to the documented fire test. The thickness of application and specific material to be utilized as well as the suitability of these materials to perform the functions identified by NEDO-10466A were reviewed by the inspectors and are available within the GE Design Record File.

A summary of the main points within NEDO-10466A is as follows:

.Pg 3-4 Fire stops are semi-permanent refractory material (such as sand) covered with RTV. Fire stop & seal designed to limit air flow.

.Pg 4-5 Fire test demonstrate PGCC system ability to maintain separate redundant Class 1E systems.

.Pg 4-6 Fire stops are easy to install, maintain, and repair. Refractory material covered with RTV limits air flow.

.App F Berkeley Fire Test Report performed to test the PGCC system.

Pg 2 Goals of fire test program

Pg 4 System description

Pg 7 Fire stopping description

Pg 68 Conclusion: PGCC system acceptable. Fire stops not severely exposed in the 30 minute fire. RTV silicone fire stops promise to be quite adequate to block fire spread if necessary.

This item is closed.

2. Deferred Verification

GE Engineering Practices and Procedures (EP&P) 5.38 Addendum 4, dated December 1975, required that a tracking system and status log of deferred verifications be maintained. The inspectors verified during NRC Inspection 86-01 that the first entry was made in the status log for deferred verifications in May 1977. At that time, it could not be determined whether verifications had been deferred before May 1977 since the status log did not contain entries of any deferred verifications prior to that date.

During the 86-01 inspection, GE committed to perform an extensive review of deferred verifications from inception through May 1977 to positively demonstrate closure of deferred design verifications. During an NRC review of this effort during the June 15-18, 1987 inspection, GE had reviewed all 15,300 Engineering Review Memorandums (ERMs) generated from inception to May 1977 to identify ERMs containing a deferred verification statement. As a result, 974 ERMs were identified which affected 3434 design documents. A computer search of these documents, performed on GE's Engineering Information System (EIS), was then used to identify the current deferred verification status of the affected documents. GE committed to researching further the status of these documents to verify closure. A DBASE III computer program was used by GE to produce a list of deferred verifications based on criteria established by the NRC during a previous NRC inspection. This criteria was based on safety-related shippable components produced by GE NEBO, San Jose, for use on domestic nuclear power plants. This search produced approximately 150 design documents of which the NRC inspector selected six for further review by GE.

In a few instances, the six documents selected for review by the NRC related directly to items referenced in Mr. Stokes' summary of Mr. Milam's work record and are associated with Limerick, Susquehanna, and the Shoreham nuclear plant. The six items are:

Item	Document No.	ERM	System/Component
1	283X569	BMA 0743	Reactor Vessel Top Guide
2	851E378	CMA 111	Reactor Protection System Elementary Diagram
3	828E375TF	AMC 0057	RWCU and Recirculation Bench Board
4	865E152	AMC 0871	RHR/HPCI I Relay Vertical Board
5	237X574TN	AMC 0600	HPCI RLV Vertical Board
6	133D9538	AMC 0568	RCIC RLV Vertical Board

For each of the six documents chosen by the NRC, GE performed a manual search of the entire document history to determine if the opening and closing of all deferred verifications was accomplished in accordance with established procedures throughout the history of each document. GE reproduced every revision level of the document to identify all ERMs and ECNs which were written against the design document. Each ERM and ECN was then reviewed by GE to identify any deferred verification statement included as part of the Engineering Review Memorandum or Engineering Change Notice. The final conclusion concerning these design documents was that all deferred verifications on the six selected documents were found to be completed (closed) as required. The EIS shows that the six documents are complete and verified, and all 1974-1976 deferred verifications on the six selected documents were completed (closed) prior to December 1976.

The inspector reviewed each of the six design documents and any accompanying ERMs, ECNs, DRFs, and other applicable documents to verify that each deferral of a design verification was completed (closed) by a verification statement as part of the ECN. The completed verification also included a signature and date in the

signoff block, "verified by." In four of the six documents, the Design Record File (DRF) also contained evidence of closure of the deferred design verification in the design verification summary portion. The six design documents were comprised of an elementary diagram, 2 parts list drawings, a connection diagram, and 2 assembly drawings. These design documents averaged 15 revisions during the document history and many of the revision levels contained as many as 12 ERMs and ECNs.

The selected sample of 6 design documents was reviewed by the inspectors, and no instances were identified where a deferral of a design verification was not eventually completed (closed) as required. Also, all six were shown as complete and verified on EIS. This item is considered closed.

3. Changes to Engineering Changes Notices (ECNs)

Several entries appear in Mr. Milam's work record and Mr. Stokes' report regarding possible changes made to ECNs after Mr. Milam had signed the document as the responsible engineer. These items were identified as Stokes report items 1.14, 2.14, 2.28, 2.39, and 5.16.

Inspection Finding - A GE review of these items to identify the specific changes noted after the sign-offs by Mr. Milam revealed the specific additions or changes to each of the referenced ECN's. No technical modification of any document was identified. All of the changes concerned administrative additions or changes where required to keep the documents within the GE document control system. All of the changes made were easily recognizable with different printing etc., but were not labeled as to the source of the modification. A memo from Mr. E. R. Welch, Manager Engineering Support (December 1981) identified the requirement that changes to unissued ECNs be initialed and dated by the corrector and the responsible engineer prior to its issue. Later ECNs provide this additional capability to document control. The following ECNs/ERMs were noted by Mr. Milam as being changed after his approval and without his knowledge:

ECN/ERM	Change/Modification Noted
1) ECN NJ-13553	Administrative change on 2nd sheet.
2) ECN NJ-13555	Verification statement added - Administration change.

3) ECN NJ-17436 - Editorial change - no technical impact.

4) ECN NJ-17441 - The authority block was changed by adding "Responsible Engineer" - Administrative change.

5) ECN NJ-18202 - The authority block was changed by removing the reference to a vendor letter and adding that reference to the narrative description of the change; system MPL block filled in; distribution identified; The authority block changed by adding "Responsible Engineer" - Administrative changes.

6) ECN NJ-18205 - Document title and MPL number corrected - Administrative change.

7) ECN NJ-17433 - ECN number corrected (duplicate) and document title changed - Administrative change (new ECN NJ-18845).

8) ECN NJ-18215 - Status of hardware corrected - Administrative change.

9) ECN NJ-12980 - Revision level of drawing corrected - Administrative change.

10) ECN NJ-18218 - Applicable projects corrected - Administrative change.

11) ECN NJ-18235 - Added "Manufacturing Review Required" - Administrative change.

12) ECN NJ-18236 - Responsible component changed - Administrative change.

13) ECN NJ-18244 - Master Parts List (MPL) number corrected - Administrative change.

14) ECN NJ-18245 - Corrected hardware status - Administrative change.

15) ECN NJ-18249 - MPL number corrected - Administrative change.

16) ECN NJ-19306 - Added "Manufacturing Review Required" - Administrative change.

17) ERM AML-2997 - Additional reference added - Administrative change.

The NRC review did not identify any deviations to the existing GE procedures for document control established under GE EOP 55-02, nor any changes that would have affected the technical content of such ECNs/ERMs. This item is closed.

4. Stokes Report Section 1.15 - "On November 29, 1979, Mr. Milam wrote R. F. Francoise about Category III changes. The problem was that the drafting practice when adding parts or groups to drawings designates the ERM in the drawing revision block as a Category III change, which is incorrect. This practice derived from the Drafting Manual, Section 10.1, page 10, whereon an example (Figure 14) illustrated this practice. Per Mr. Milam's review of EOP 42-6.10, which spells out the responsibilities for ERMs, and EOP 55-2.00, Appendix B, Section B3.1.3, which defines Category III change requirements for ECNs, Mr. Milam was not able to find anything that relates change categories to ERMs, which do not make changes but rather additions. Mr. Milam requested a revision to the Drafting Manual deleting line 4.8.4.3 and also the ERM reference in Figure 14 (Section 10.1)."

   Inspection Finding - Mr. Milam was incorrect in his interpretation of the procedures and drafting manual relative to the exclusivity of the use of ECNs and ERMs for document application.

   Mr. Milam was requesting a revision to the Drafting Manual because he interpreted it as not following the EOP requirements relative to Category III changes and the use of ERMs for such changes. This request grew out of his observation that CNV Alpha revision drawings were being changed to numerical revision (Rev. 1) authorized by Category III ERM documentation. An ERM is also used to add parts or groups to a document and an ECN is not required. When an ECN is not required, the ERM numbers and the change are entered in the revision area of the document. This type of revision is a Category III change. The use of the drawing is protected against unknown changes for production (without-ECN) by control of preliminary drawings (alpha revisions) and the release of new group or parts. Preliminary (alpha) revision drawings cannot be released for production and an Engineering Instruction (EI) is required to release new parts or groups. This item is closed.

5. Stokes Report Section 1.21 - "On Friday of the second week of February, 1980, Mr. Milam discovered an error in the Corrective Action Request (CAR) programs. They would not run if there were

only one CAR. It appeared that the sort routine "blew up" when it tried to sort only one CAR. Mr. Milam entered in his log that he fixed the CAR program during the third week of February."

Comment: "There appears to be no program control, independent verification, or notification of errors to other users; all violate one or more sections of 10 CFR 50, Appendix B criteria."

Inspection Finding - This program was only in place for the use of several GE staff members and was a convenience program not a NEBO document control or QA program. As such, no official GE controls existed for this program. Violation of 10 CFR 50 Appendix B was not identified. This item is closed.

6. Stokes Report Section 1.23 - "During the second week of March, 1980, Mr. Milam completed a long back-burner job. He sorted and filed old CARs. While doing this, he discovered four (4) white copies (originals):

   1. Three committed corrective actions not completed:

      SJ-32635 on Kuo Sheng 2 H13-P602 written 4-13-78
      SJ-32664 on Kuo Sheng 2 H13-P602 written 5-12-78
      SJ-32634 on Kuo Sheng 2 H13-P602 written 4-13-78

   2. One completed but not returned:

      SJ-32245 on Cofrentes H13-P603 written 5-4-78.

   Mr. Milam was not sure how to handle them."

   Comment: "From the brief statement, there was sufficient information to indicate a violation of 10 CFR 50, Appendix B, Section III, Design Control, since CARs are engineering documentation."

   Inspection Finding - CARs SJ 32634, 32245, 32635, and 32644 for Kuo Sheng Panel H13-P602 were logged on the Panel Production Status Log. The ECNs for correcting each CAR were listed on the status log and verified as having been incorporated. A sample of other CARs reviewed during the inspection were found to have been closed prior to Mr. Milam's work record date. The GE document control system operated even though the original CARs had been left in Mr. Milam's basket. The purpose of each CAR is to initiate corrective action via an ECN. This item is closed.

7. Stokes Report Section 2.47 - "Reviewing the work record for the third week of July brings a new problem. The assignment of the same task to multiple employees."

   Comment: "This shows that the lack of work control extends on up the ladder of management. This could be an example of an error by management or, depending on what the assignments were, a deliberate act. Example: The group lead or manager could have a problem which is borderline failing if one engineer does it precisely, it fails, but if it is done by another engineer with less precision, it would pass. Up to five engineers have been observed working the same problem with only the calculation which passed used. The bottom line was not accuracy but getting the results sought. The most accurate calculations should be used at all times regardless of the results. Otherwise, this should be considered a violation of 10 CFR 50, Appendix B."

   Inspection Finding - Calculations could not be found in Mr. Milam's work record near this time period nor could Mr. Stokes' comment be supported for this work effort. The assignment of more than one person to a particular task is not a violation of any procedure. This item is closed.

8. Stokes Report Section 2.48 - "In the work record for the third week of July, CNV drawings were being advanced from Revision A to Revision 1 with Category III changes that in some cases include Design changes (169C9433, H13-P642). Per EOP. Design changes cannot be Category III. According to a letter from GE's Dave Lee to Mike Hurn on 7-17-80, an Engineering Review Memoranda (ERM) was used to bring the "alpha" document to numeric Revision 1 and that the "Category III" changes as authority for changes to drawing is incorrect. Drawings were still being found with design changes labeled Category III during the last week of July 1980. Mr. Milam was not able to obtain any assurance that notations already made in error would be corrected."

   Comment: "This violates 10 CFR 50, Appendix B, Section XVI, Corrective Action."

   Inspection Finding - The GE system of documentation control provides a traceable and recorded means of adding engineering changes to a drawing going from alfa to Revision 1 status. The numeric revision of the drawing changes the status of the design to an authorized

design that is then under ECN revision control per GE EOP 55.2. No violation of 10 CFR 50, Appendix B could be identified. This item is closed.

9. Stokes Report Section 2.52 - "On July 28, 1980, Mr. Milam wrote a letter to C. L. Cobler about the revision control of Manufacturing Standard Practices (MSP).

Ref. 1) 159C4279AB, Revision 1, RPS Power Distribution Enclosure A, Connection Diagram, Kuo Sheng 1 and 2.

2) Inspection Instruction PA-002, Revision 10, Panel Product In-process Inspection.

3) Inspection Instruction PG-003, Revision 7, PGCC Panel Module Product In-process Inspection.

Mr. Milam said each of the references draws upon the MSP Manual. Thus, the MSP becomes a part of the engineering design. However, no reference is made to a particular MSP revision. For example, 828E342AD Revision 2, Process Radiation Monitoring Instruction Panel Connection Diagram, (Cofrentes) is an instance of non-revision-controlled use of MSP's."

Comment: "Without a controlled reference number, the references have no traceability. If used as part of the design documentation for safety-related components, this violated 10 CFR 50, Appendix B."

Inspection Finding - GE maintained controlled processing by the use of a manufacturing log and use of the latest issue of process MSPs for each item. Traceability was available but inconvenient and no violation of 10 CFR 50, Appendix B was noted. This item is closed.

10. Stokes Report Section 1.1 - "During the second week of May, 1978, Mr. Milam recorded that he began verification of CNV 1 & 2 and Cofrentes panels H13-P654 and H13-P655. H13-P654 and H13-P655 are standard Nuclear Reactor Protection System panels for nuclear reactor facilities at Grand Gulf 1 & 2, Black Fox 1 & 2, Clinton 1 & 2, Centrale Nuclear de Valdecaballeros (CNV) 1 & 2, Cofrentes, and Skagit. Mr. Milam encountered a problem with the CNV 1 & 2 and Cofrentes Electrical Device List (EDL). The item numbers did not match those on the standard assembly drawing. Mr. Milam wrote, Note that I did the verification although Russ will sign as verifier, following which I will resolve the verification comments."

Comment: "When one person does an act which is recorded as having been done by another, such as checking a drawing, several possibilities result. (1) The document record is false. (2) The work has not been independently verified, as required by 10 CFR 50, Appendix B."

Inspection Finding - A review of the records pertinent to this item revealed no instances of a lack of procedural compliance for verification of these panel design documents nor did the records indicate participation by Mr. Milam in the verification of the subject panels. Further, there is no inconsistency with the requirements of 10 CFR 50 Appendix B if the verification activity is delegated to another qualified person providing the verifier is independent of of the design and the original verifier. The EDL ERMs for CNV and Cofrentes (AMD 1242, 1243, and 1763) associated with H13-P654 and P655 were reviewed. It was noted that Mr. Milam's name did not appear on any of the ERMs listed. All ERMs except AMC-2588 (issued 3/2/78) were issued in 1977. Mr Thompson's name is shown on ERM, AMD 1763 as the design engineer. All ERMs indicate idependent verification. This iten is closed.

11. Stokes Report Section 1.2 - "An entry made during the first week of August 1978, identified multiple labeling errors. In reviewing a drafting package for H13-P631, Mr. Milam encountered two sets of labeling errors on the isolators (1 set on assembly, 1 set on the connection diagram). With both wrong, he could not use either to correct the other."

Comment: "The normal progression of drafting is for the more general type arrangements to be designed, drawn, and checked first, and the more specific and detailed to be drawn using the data from general drawings with additional facts. Here, it appears that both the order of development between the assembly and connection diagrams were uncontrolled, and neither was accurately checked. This could also be a sign of a "let someone else do it" attitude problem among the employees. A violation of 10 CFR 50 exists, since (1) either the procedures do not exist to ensure against this or (2) the procedures are not being followed."

Inspection Finding - Reviewing documents for correctness is a normal responsibility for the Responsible Design Engineer. Documentation of activities subsequently indicated that Mr. Milam took action to correct the affected drawings which occurred prior to issuance of the drawings. This item is closed.

12. Stokes Report Section 1.3 - "Mr. Milam did some research on document labeling requirements during the third week of August. After reviewing IEEE standard 494-1974, he came to the conclusion that some of GE's drawings were not labeled in accordance with the IEEE standards. Mr. Milam notified the Syracuse office and decided to correct the drawings in his office himself."

    Comments: "Without communication and cooperation of management, there is no guarantee that all corrections were made nor corrective training held to prevent the same problem from continuing. Mr. Milam's actions did not satisfy the requirements of 10 CFR 50, Appendix B. This reflects a training problem which is obvious in Sections 1.5 and 1.13."

    Inspection Finding - Some drawing production was contracted to GE's Syracuse office, but the purchase order did not require adherence to IEEE 494-1974. It was part of the job of the Responsible Design Engineer to research the labeling requirements and code applicability in accordance with the governing procedure. This item is closed.

13. Stokes Report Section 1.4 - "Mr. Milam, when reviewing H13-P614, discovered that many devices had not been deleted from the Device List (and EDLs) per earlier instructions from Systems Engineers. The drawing was per deletion instructions and was not supported by Systems drawings."

    Comment: "Had Mr. Milam been assigned to update the Device List, this entry would not have much importance. However, he was not. This indicates that somehow this work was overlooked. 10 CFR 50, Appendix B, Section III, Design Control prescribes that controls be established to ensure that this does not happen."

    Inspection Finding - The drawing errors were identified, checked with the Systems Engineer, and corrected by direct input to the computerized Engineering Information System (EIS). All documentation was changed as necessary to be consistent. These activities are the responsibility of the Responsible Design Engineer and were performed by him per GE procedure. This item is closed.

14. Stokes Report Section 1.5 - "A letter to H. H. Hendon on September 19, 1978, concerned the audit of Centro Nuclear de Valdecaballeros (CNV). Several of the highlights listed were of interest. a) The first was that EOP 75-5.00 (Training) was not being implemented for new employees. S. Garg (Reghitto, Manager), professed ignorance of procedures due to only having been on the job two months."

Comment: "There are basically two functions for any auditing department -- (1) to discover problems within the system; and (2) to resolve the cause of the problems to prevent similar future occurrences. This entry indicated that the first function was being performed. The question remaining is, were the problems resolved? Many entries which followed this one indicate that the problem was not resolved, a violation of 10 CFR 50, Appendix B, Section XVI, Corrective Action."

b) "The second was that ECN (NE65571) stated that verification was contained in DRF 921D17 N*3, but the DRF did not contain the verification for this ECN (W. Fraser)."

Inspection Finding - a) This allegation was addressed in NRC Inspection Report No. 99900403/86-01 and was identified as a nonconformance. It was closed out in NRC Inspection Report No. 99900403/87-01 item D.5. This item is closed.

b) Review of the reference DRF showed that verification for ECN NE 65571 is contained therein. The ECN was prepared on September 25, 1975 and the design verification sheet was signed off on September 26, 1975. This item is closed.

15. Stokes Report Section 1.10 - "A minor problem was noted during the last week of June, 1979. In reviewing H11-P620 engraving drawing, Mr. Milam discussed some marker plate legends with T. Garg, Systems Engineer for HPCI. Mr. Milam was surprised to learn that T. Garg was not aware that the circuit labels on elementary diagrams are used for marker plate legends."

Comment: "This was one of many references to problems with the marker plate legends. Milam's note indicated that Garg previously should have been aware of the use of the circuit labels."

Inspection Finding - It was determined that circuit labels on the system elementary diagrams are used by the panel engineer only as a guide for preparing the panel legend plates and annunciator window legends. Final marker plate legends are determined by the customer. The Electrical Systems Engineer is not involved with the preparation of hardware drawings or marker plate legends. This item is closed.

16. Stokes Report Section 1.11 - "During FW7929 (the third week of July, 1979), Mr. Milam completed comment resolution for ERM AMC-3602, with Isolator Terminal Board Assembly and Connection Diagrams. These

were sent to Z. Tashjian, Electrical Product Design, for further review. Virginia Woldow reviewed document quality instead of performing independent design verification."

Comment: "It is difficult to understand how one can check quality without checking the design, unless quality means the presentation of the work. In any case, this violated 10 CFR 50, Appendix B."

Inspection Finding - A review of ERM AMC-3602 indicated that adequate and appropriate independent design verification was performed following the document quality review. This is evidenced by the comments and responses made to correct deficiencies. This item is closed.

17. Stokes Report Section 1.13 - "Entries were made during the second week of November 1979, when Mr. Milam had attended an EIS users class and an IR class. This was the first record that Mr. Milam had received any training in these two subjects."

Comment: "Upon consultation, Mr. Milam said that based upon his memory, he had not received any training before this. The lack of any previous training in these areas as well as others is a violation of 10 CFR 50, Appendix B, Section II."

Inspection Finding - This allegation was addressed in NRC Inspection Report No. 99900403/87-01, item D.5 which closed out nonconformance item 86-01-05, as contained in NRC Inspection Report No. 99900403/86-01. This item is closed.

18. Stokes Report Section 1.16 - "Mr. Milam made an entry during the third week of December 1979, that Cofrentes H13-P602 became a problem on Tuesday. Projects wants to ship 'as-is' but panel has many problems."

Comment: "Shipping known nonconforming components is a violation of 10 CFR 50, Appendix B, Section XV, Nonconforming Materials, Parts, or Components."

Synopsis: "On December 14, 1979, the work required by Floor ECNs was not complete but was signed off by the shop. While Mr. Milam was writing this entry on December 18, 1979, the shop was trying to finish some of the work before the panels were shipped. The work was on Cofrentes H13-P602."

Comment: "Signing documentation before completion could result in defective equipment being installed and used. If these panels were shipped prior to a complete inspection being completed, this was a violation of 10 CFR 50, Appendix B, Section X, Inspection."

Inspection Finding - Pertinent documentation indicates that the H13-P602 panel for Cofrentes was built in accordance with approved drawings, ECNs and specifications. All floor ECNs were signed off by both Manufacturing and Quality Control. The shipping records confirm that all work was performed in accordance with established practices, procedures and assigned responsibilities. However, some of the required equipment was not available at the time of shipment resulting in a "ship short" situation. GE Engineering Operating Procedure (EOP) 55-3.20 defines the controls for shipping panels short of equipment by requiring that a Field Disposition Instruction (FDI) be issued. In fact, FDI MEEH properly approved by Engineering and the customer was issued. It was concluded that Mr. Milam's concern, while correct in content, was not valid since proper controls were established for the condition that existed. This item is closed.

19. Stokes Report Section 1.18 - "Weekly report FW8005 to L. C. Wimpee from C. W. Hart had an interesting paragraph. The design for the Hope Creek 1 & 2 Reactor Protection System Vertical Boards H11-P609 and P611 cannot be completed because the elementary drawings continue to change drastically. Promises by Control and Electrical Engineering are not being kept. The work-around efforts by both C&I Panel Engineering and Engineering Support have resulted in very much wasted time. In the interest of supporting projects and the department, C&I Panel Engineering will continue to complete the design using as many work-around procedures as are possible."

Comment: "Working around normal operating procedures can only mean that they were violating 10 CFR 50, Appendix B criteria."

Inspection Finding - In the event of design or manufacturing difficulties, a managerial perogative in order to maintain production schedules is to accomplish planned activities in a different sequence or in parallel with other activities. All activities and products are still subject to procedural, quality control, and regulatory commitments thereby assuring a quality product. This item is closed.

20. Stokes Report Section 1.19 - "Mr. Milam wrote ECN NJ-12971 to remove a general interference problem on 163C1122, Conduit Strap, for Joystick Switches during the first week of February, 1980. According

to his record, this required FDIs for Kuo Sheng 2 and Cofrentes and a very carefully worded disposition because ten other shipped panels are affected."

Comment: "It is unclear why Mr. Milam had to carefully word the disposition. It is equally unclear whether the other ten were not fixed, or whether Milam was simply afraid of what management would think if they were fixed?"

Inspection Finding - This change was considered to be for product improvement and interchangeability that is governed by GE EOP 55-10.00, "Interchangeability Requirements." All affected plants/ installations must be identified and dispositioned by EOP 55-2.00, "Engineering Change Control." As such, a carefully worded disposition is necessary to clearly define the implementation requirements for the change. Should the customer elect to incorporate the change, an FDI or FDDR must be prepared as was done for Kuo Sheng 2 and Cofrentes (FDIs MLDG/MEEJ). It was concluded that Mr. Milam's concern described the normal process for dispositioning a change to a shipped product. This item is closed.

21. Stokes Report Section 1.22 - "During the last week of February, 1980, Mr. Milam wrote that the drawings for Kuo Sheng C61-P001 did not show the cutout for the utility outlet. Yet per Pat Falconia, the outlet was installed in a rear post on unit 1 in the field. He stated that he had no design details and could not make unit 2 like unit 1."

Comment: "A quality assurance program should ensure that the drawings are accurate representations of components installed in a nuclear plant, since these records may prove vital during an emergency. Since the drawing is made from design calculations and sketches which precede the fabrication of components, the components fabricated should be per the drawing and not vice versa. Changes to fabricated components should not be made without both verification of the original design and changes to the documentation indicating the changes and their acceptability. The notation above by Mr. Milam's name indicates that these things did not not happen. This is a violation of 10 CFR 50, Appendix B, Section III, Design Control, and Section VII, Control of Purchased Material, Equipment, and Services, and others."

Inspection Finding - Corrective action request SJ 53083 was issued and resulted in the addition of the utility outlet location by ECN NJ 13527. Subsequently, the cutout type was changed via ECN NJ

13565. This ECN also records the "as built" cutout design and location for both Unit 1 and 2. It was concluded that Mr. Milam's concern was incorrect with regard to the documentation of the design details. This item is closed.

22. Stokes Report Section 1.24 - "On March 24, 1980, when resolving CAR SJ-54194, Mr. Milam found out that on C61-P001 enclosures the cutouts called out cause interference between marker plates. Unit 1 engraving drawing had been changed to call for smaller marker plates, but the enclosures were still wrong, as was the Unit 2 engraving drawing. Fab shop "bootlegged" the cutout; so, marker plates were offset to the side to avoid interference. Mr. Milam did specify rework on these enclosures. However, there is no written guarantee that the work was done."

Comment: "Again, this circumvention of procedures is a violation of 10 CFR 50, Appendix B requirements. See also Section 1.22."

Inspection Finding - Corrective action report SJ 54194 was issued to resolve the problem. It was then discovered that the marker plate size needed to be revised to accommodate the cutout spacing. Enclosure drawing 133D9468 was revised to show the correct marker plate location with FDIs MKCD and MLBL issued to correct the problem. It was concluded that this was a typical drawing error problem that was corrected by proper procedure. This item is closed.

23. Stokes Report Section 1.25 - "On Thursday, March 27, 1980, Mr. Milam discovered a generic problem on G41-P001 panels. The second row of relays from the bottom had an interference problem. The terminal screws were shorted against welded channels. This was first noticed on Grand Gulf 2 G41-P001, CAR SJ 54138. He observed the problem on panels for Grand Gulf 2, TVA 21, and CNV. He showed the problem to Bob Gordon, QA, 4:15 p.m. The TVA panels were shipped anyway, Friday."

Comment: "The fact that QA was notified of this problem not only indicates a violation of 10 CFR 50, but is proof that QA has succumbed to production. This supported Mr. Milam's contention in Section 4.13 that having the QA manager report to Mr. Senn was a problem."

Synopsis: "Mr. Milam stated that on the last panel he was working on, just prior to his transfer, mylar was used to solve the separation problem when some contacts were shorted against the support angles. He said the mylar was not included on the Parts List."

Comment: "This also violated 10 CFR 50, Appendix B criteria."

Inspection Finding - Corrective action report (CAR) SJ 54138 was prepared by the shop to correct the interference problem encountered during the assembly of Grand Gulf panel G41-P001. Subsequently, ECN NJ13545 was prepared to correct the drawing. A similar problem for TVA panels was resolved later when the same panel for Unit X-22 (cancelled plant) was being fabricated. CAR SJ56873 was written and ECN NJ20744 was prepared; also Field Disposition Instructions (FDIs) were issued to correct the problem on the previously shipped TVA panels. It was concluded that this was a typical manufacturing and design problem for which procedures for correction were available and implemented. This item is closed.

24. Stokes Report Section 2.2 - "During the first week of April, 1980, Mr. Milam was told that non-fungus-proof terminal boards were no longer available even though, according to Mr. Milam, many drawings still specified non-fungus-proof terminal boards."

Comment: "This simple statement indicated that standard details and old drawings, when being issued for a different job, were not reviewed for accuracy and compliance with that project's requirement for material availability. Verification should be performed each time a drawing is used, to verify current correctness. Here, this had not been done and over the years material or components which once were available had since stopped being made. Thus, a nonconforming part was used. This is a violation of 10 CFR 50, Appendix B."

Inspection Finding - It was learned that Mr. Milam was misinformed. General Electric purchased phenolic terminal boards which are fungus resistant from Marathon per drawing 198B6134. The boards are made non-fungus-proof by the use of a special coating added at extra cost to satisfy customer specifications. This item is closed.

25. Stokes Report Section 2.3 - "On April 4, 1980, a Department memo from C. L. Cobler to Unit 995 on the subject of "ECN Verification Statement" stated that the best verification statement would list all the documents reviewed that are associated with the change but that this was impractical with the number of drawings and documents involved in the Floor ECNs."

Comment: "The likely reason for this being impractical was that this impeded the shipping schedule. QA should have caught this and stopped this incomplete documentation from occurring. The fact

that the incomplete documentation took place indicated QA's inability to function. Not only was the incomplete documentation a violation of 10 CFR 50, but so was QA's inability to function freely."

Inspection Finding - It was determined that the alternate approach of using the Design Record File (DRF) as a compilation of reviewed documents provided an adequate reference for subsequent verification statements. Therefore, all documentation requirements were still met. This item is closed.

26. Stokes Report Section 2.6 - "In the third week, Mr. Milam discovered that La Salle H13-P645 Panel did not agree with the La Salle Master Parts List (MPL) and that the original Engineering Review Memoranda (ERM) for La Salle H13-P644, H13-P645, and others were rejected by the MPL people in January 1979, but issued anyway by Larry Odda. The ERM listed on the arrangement drawing was the wrong ERM and the parts list description of groups listed group 1 against both La Salle units and did not list group 2. Corrections attempted by Corky to MPL and Engineering Information System (EIS) and Sam to the Parts List (PL) and ERM number on the arrangement drawing."

Comment: "These are just two more instances of document or design control problems violating 10 CFR 50, Appendix B."

Inspection Finding - Review of the subject documents indicated that the requirement for listing of parts list group 1 against Unit 1 and group 2 against Unit 2 was met. Due to schedule commitments, management decided to proceed with the design prior to issuing the ECA and prior to the revision of the MPL adding two panels. The design was completed and ERM AMJ-046 was signed off in January 1979. The ECA was subsequently approved on March 28, 1979, and the MPL updated adding the panels. All documentation was determined to be correct. This item is closed.

27. Stokes Report Section 2.8 - "When processing ECN NJ-17584 for the Fuel Pool Cooling and Cleanup System elementary diagrams for Grand Gulf and TVA which was needed along with ECN NJ-13557 to resolve Correction Action Request (CAR) SJ 56233 against TVA 22 G-41-P003, Mr. Milam discovered that neither ECN was complete. He also found that the panels all come from the same connection diagram but they have different elementary diagrams thus causing many problems when trying to correct connection diagram problems."

Comment: "This is a problem which is almost impossible to see when developing procedures. Only those using them eventually discover what is wrong. GE allows one drawing such as a connection diagram to be used for one, two, or more different projects or plants. This drawing should contain the reference numbers to all associated drawings, i.e., general arrangements, diagrams, details, etc. for which it may be used. As long as the drawing is only used for one or two different projects or plants, the problem may not exist, but at some point, the drawing becomes so complicated that it is virtually impossible for it to be checked without errors being made. In Mr. Milam's work record, there were many references to drawings which applied to three, four, and more facilities. Those entries seemed harmless, but in the context described above could spell disaster."

Inspection Finding - Certain panels previously shipped affected by ECN NJ-13557 had wiring changes incorporated in the field through FDIs. ECN NJ-17584 was modified by Mr. Milam to include reference to projects and FDIs for shipped units. Mr. Milam's additions to these ECNs were not required since FDIs were listed against hardware ECN NJ-13557. This item is closed.

28. Stokes Report Section 2.10 - "Nearing the week's end, Mr. Milam found out from Bernie that Engineering tells Shop to build things "not per print" with the anticipation of buying it off with an IR (Inspection Report)."

Comment: "This results in drawings not being fixed and future problems in using the same drawings for subsequent units. This practice more than likely stems from the use of deferred verifications. When design verification is put off, the workers become less concerned about work quality. This is because they expect someone else to finish what was deferred. A careless attitude develops. The bottom line is that work quality suffers to the point that nothing may be done correctly. Bernie's practice, if done without controlling procedures, is a violation of 10 CFR 50, Appendix B criteria, and if procedures are in place which can be used to circumvent normal procedural controls, this is also a violation of 10 CFR 50, Appendix B."

Inspection Finding - A review of related documentation could not substantiate Mr. Milam's concerns in this area. General Electric, however, categorically claims that it does not fabricate items contrary to drawing requirements. This item is closed.

29. Stokes Report Section 2.15 - "On April 19, 1980, Mr. Milam was asked to sign-off for separation of Kuo Sheng C61-P001 panel which he had not reviewed. He refused and less than an hour later he was informed that there were separation problems on the panel. On a copy of Mr. Milam's work record for FW 8017 was written the following note: Sam -- The manager of engineering has agreed to perform a separation audit on all panels. Please review the separation on your responsible panels and sign off the transfer papers requested. Lee Cobler 4-18-80."

    Comment: "Mr. Milam's efforts did pay off with some action but not by the responsible party. Here QA should be performing the review, not Engineering."

    Inspection Finding - The separation review and signoff was not directed to be done without review. This function was a normal part of Mr. Milam's production responsibilities. In this particular case, an alternate production engineer performed the function in accordance with management direction and approved procedures. This item is closed.

30. Stokes Report Section 2.17/2.18 Item 2.17 - "During the first week of May, 1980, La Salle Panels H13-P644 and H13-P645 were shop wired with standard terminal lugs instead of those required on La Salle. According to his instructions, Mr. Milam attempted to get the customer to accept panels as wired."

    Comment: "In his attempt to get the customer to accept nonconforming panels, Mr. Milam was attempting to avoid rework to the panels, possibly due to a pressing scheduled release date. He never anticipated the work that would be required to document this acceptance of nonconforming panels. Had both been weighed, he more than likely would have had the panels fixed instead."

    Item 2.18 - "During the second week of May, 1980, both projects and the customer agreed to accept the panels. However, projects did not want to write a PWA (Project Work Authorization); they only wanted to write a letter. Mr. Milam did not feel that a letter was adequate to cover a departure from documented project requirements (EWA KA75J19, Revision 0) and QP 10.027. Mr. Milam decided to write an ECN making this deviation a temporary substitution."

    Comment: "Per a clarification from Mr. Milam, the meaning of "temporary" as used here is that the change could be done permanently for a specified (temporary) period of time."

Inspection Finding - The customer was contacted and agreed to accept the standard terminal lugs. The necessary documentation was prepared to accept the nonconforming panels. It was concluded that Mr. Milam's concerns were not substantiated since adequate procedures were available and implemented to correct the problem. These items are closed.

31. Stokes Report Section 2.20 - "Mr. Milam talked to John Flaherty on 5-13-80. Marker plate size on La Salle 1 H13-P644 was changed by Field Disposition Instruction (FDI) but no one changed the marker plate cutout drawing to accommodate a larger marker plate. Thus, Unit 2 panel was also made using the wrong cutout. John told Mr. Milam that the FDI was incorporated in the field. According to Mr. Milam, this means they drilled new holes in the panel without changing the design drawing. John said it does not matter if the drawings match the panel."

    Comment: "Not only does this indicate a violation of 10 CFR 50, Appendix B, but John's attitude needs correcting."

    Inspection Finding - It was determined that ECN's NJ17437 and NJ17438 were processed to correct Parts List 442X206 and drawings 913E800/802. FDI TDEJ provided corrections for the shipped products and a visual inspection at La Salle confirmed that the ECN and FDI requirements were implemented. Corrective action has been taken by GE to incorporate the requirements of ECNs and FDIs into the respective Parts List. This item is closed.

32. Stokes Report Section 2.21 - "During the second week of May, an ECN was prepared to correct the generic design problem on the Hope Creek top covers. Not issued."

    Inspection Finding - While Mr. Milam indicated that an ECN was prepared, no information could be found on the existance of a generic problem or the issuance of an ECN. Without identifying the ECN, Mr. Milam in his documented work record reviewed the problem (and the ECN) and concluded that the solution was acceptable. This is also consistent with Mr. Milam's job responsibilities. This item is closed.

33. Stokes Report Section 2.24 - "A recurring problem in Mr. Milam's record is that the wrong engraving drawing has been referenced to a plant. An English engraving drawing has been applied to CNV. The engravings for CNV must be in Spanish."

Comment: "This problem might seem trivial but could be serious for maintenance and operations personnel. This surely would be caught at shipment or upon receiving inspection, but maybe not if the people performing those tasks have the same attitude problem as GE's employees in the San Jose office."

Inspection Finding - The process for fabricating marker plates with the correct notations involves referencing the engraving drawings that are in English, issuing an Engineering Work Authorization (EWA) for obtaining a translation in Spanish from the customer, and releasing the correct notations to manufacturing for fabrication. The EWA was issued but was apparently overlooked by Mr. Milam. This item is closed.

34. Stokes Report Section 2.27 - "In the first week of June, Mr. Milam was informed that there was a large number of errors on the assembly drawing and parts list for G36-P002. In view of the number of errors discovered to date in the enclosure drawing, Mr. Milam recommended the drawings be sent back to drafting for a complete recheck."

    Comment: "The drawings do not seem to have been checked properly."

    Inspection Finding - Errors in the assembly drawing for control panels were identified on the production floor. Examples of the errors included noncompatible nuts, screws channels, and fasteners. Rather than shutting down production for a complete drawing recheck, GE decided to address and correct each problem as it arose consistent with the responsibilities of production engineering associated with manufacturing, testing, and shipping. GE stated that all work was performed in accordance with established procedures and management direction. It was concluded that Mr. Milam's statement was substantiated and that appropriate corrective action was performed consistent with production floor functions and applicable procedures. This item is closed.

35. Stokes Report Section 2.31 - "A new problem recorded was that Manufacturing Standard Practice (MSP) 14.017 stated that shop-supplied hardware could be substituted for the screws supplied with the switch, but made no distinction between nuclear safety-related switches and others. La Salle H13-P645 was held up."

    Comment: "This procedural defect is a violation of 10 CFR 50, Appendix B, Section XV, Nonconforming Materials, Parts, or Components. Measures shall be established to control materials,

parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation." See Section 2.86.

Inspection Finding - To accommodate the routing of wiring due to the closeness of switch spacing (4" separation) and the standard shop practice of using ring or spade lugs for terminations, the General Electric production group replaced the saddle clamps provided by the vendor (GE General Purpose Controls) with ring lugs that required longer screws. However, the vendor indicated that such a change would invalidate the seismic qualification of the switch. Therefore, GE, under PRC 81-35, seismically tested the revised configuration of the switch and found it to be qualified. All plants to which completed equipment had already been shipped were checked and terminations that differed from the test configuration were made to conform. This item is closed.

Company GENERAL ELECTRIC

Dates NOV 9, 1987

Docket/Report No. 99900403/87-06

Inspector

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ENTRANCE MEETING

NAME(Please Print)	TITLE(Please Print)	ORGANIZATION(Please Print)
RP MCINTYRE	REACTOR ENGR	USNRC
P.W. Eshleman	Systems Engr.	O'Donnell/USNRC
R.K. WALDMAN	PRINCIPAL ENGINEER	GE
Don H. FERGUSON	QA&IS MGR	NE QA
[illegible signature]	Sr Program Manager	GE QA
J.N. CASE	Q/A SYSTEMS MGR	G.E. QA
C.W. HART	PRINCIPAL ENGINEER	GE NEBO
B A Smith	Counsel	GE
B.A. Smith	Principal Eng'r	GE
RL PETTIS JR.	REACTOR ENG.	USNRC
D.J. ROBARE	LICENSING & CONSULTING SERV.	GE
H.D. Powell	Mgr. River Bend Services	GE
Ivan Stuart	Mgr QA	GE

Company GENERAL ELECTRIC Dates Nov 12, 1987

Docket/Report No. 99900403/87-06 Inspector

EXIT MEETING

NAME(Please Print)	TITLE(Please Print)	ORGANIZATION(Please Print)
BP MCINTYRE	REACTOR ENGR	USNRC
RL PETTIS Jr.	Engineer	USNRC
P.W. Eshleman	Systems Engr.	O'Donnell/USNRC
GB. Strambeck	Program Manager	Lic + Gns Serv. - GE
J. M. CASE	Q/A SYSTEMS MGR	GE - QA
D.N. FERGUSON	MGR, QAE&S	NSQA
R.C. MITCHELL	MGR, Nuc Prod Uc	L&CS - GE
C.W. HART	Principal Eng	GE NEBO
H.D. Powell	Mgr River Bend Services	GE - L+CS
T T Fox	Sr Program Manager	GE - QA
C.L. Cobler	MGR Process Cont & Elect Design	GE NE&ES.
Ivan F. Stuart	MGR QA	GE
B.A. Smith	Counsel	GE
R.K. WALDRAN	PRINCIPAL ENG.	GE - GENE
B.A. Smith	Principal Eng	GE
W.P. HAASS	Sr Reactor Eng	USNRC

INSPECTOR W. HAASS

SCOPE

DOCUMENTS EXAMINED

DOCKET NO. 99900403

REPORT NO. 87 - 06

PAGE 1 OF

ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
	STOKES	REPORT		(MILAM ALLEGATIONS)	
1.1	ALLEG			6/24/87	Design Verification
1.2	ALLEG			9/2/87	Drafting Package Error
1.3	ALLEG			7/27/87	Document Labeling
	LISTING OF	STOKES		ITEMS REVIEWED BY THE NRC.	
1.4	ALLEG				Drawing Errors
	WORK SUMMARY	#1658		WEEK 34	Summary of Work Activities (Milam)
	"	#1633		WEEK 20	Summary of Work Activities (Milam)
	"	#1659		WEEK 34	Summary of Work Activities (p.2). (Milam)
1.5a	ALLEG			6/24/87	Training Audit.
1.5b	ALLEG			6/24/87	ECN Verification
		#1664		9/19/78	CNV Audit memo L.D. Test to H.H. Henderson.
	ECN	NE65571		2/20/76	Engineering Change Notice
	DVS	912-D17-#83		9/26/75	Design Verification Sheet
1.8	ALLEG			6/24/87	Drawing Errors

TYPE OF DOC:

DWG - DRAWING
SPEC - SPECIFICATION
PRO - PROCEDURE
QAM - QA MANUAL
QCD - QC DOCUMENT
P.O. - PURCHASE ORDER

LTR - LETTER

INSPECTOR W. HAASS

SCOPE

DOCUMENTS EXAMINED

DOCKET NO. 99900403

REPORT NO. 87-06

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ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
1	PRO	EOP42-8.00	1	7/20/87	Document Issue and Application by ERM
2	PRO	EOP65-2.10	6	7/20/87	Safety Classification
3	PRO	EOP55-3.20	-	8/15/81	Field Origination Instruction
4	PRO	EOP 55-2.00	-	12/29/81	Engineering Change Control
5	PRO	EOP 55-10.11	-	6/18/84	Interchangeability Requirements
6	PRO	MSP14.007	15	1/13/84	Mfg Std Practice - Wire Dress for CR2940, E30, C/H Pushbutton Switches, and Indicator Lamps
7	PRO	MSP15.004	3	2/5/79	Mfg Std Practice - Service Loop - Wire Dress for CR2940 & Indicator Lamp
8	PRO	MSP15.005	5	11/15/78	Mfg Std Practice - Service Loop - Wire Dress for E30 Pushbutton Switch and Indicator Lamp
9	PRO	MSP-15.006	1	11/15/78	Mfg Std Practice - Service Loop - Wire Dress for C/H Pushbutton Switch and Indicator Lamp.

TYPE OF DOC:

DWG - DRAWING
SPEC - SPECIFICATION
PRO - PROCEDURE
QAM - QA MANUAL
QCD - QC DOCUMENT
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INSPECTOR W. HAASS

SCOPE

DOCUMENTS EXAMINED

DOCKET NO. 99900403.

REPORT NO. 87 - 06

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ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
	WORK SUMMARY	#1721		WEEK 11	Summary of Work Activities (Milano)
1.9	ALLEG			6/24/87	Drawing Errors
1.10	ALLEG			6/24/87	Elem. Diag. Against Labels
1.11	ALLEG			7/10/87	Design Verification
	ERM	AMC-3602		8/11/79	Terminal Boards
1.16	ALLEG				Shop Non-Conformance Parts
	PQC			1/28/80	Product Quality Certification for Panel H13-P602
	Panel H13-P602			1/26/80	Records Checklist Panel Production (Includes ECN records, W/S planning cards, CAR status, & rework records)
1.18	ALLEG				Engineering Procedures
1.19	ALLEG				Product Improvement
	ECN	NJ-12971		2/8/80	Engineering change of air clearance to avoid an interference
1.22	ALLEG				Utility Outlet Cutout
	Work Summary	#1904		WEEK 8&9	Summary of work activities (Milano)
	ECN	NJ-13527	-	3/7/80	Utility cutout location.

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1.24	ALLEG			8/31/87	Marker Plates.
	Work Summary	#1922		WEEK 8013	Work summary of activities (Milano)
	CAR	SJ-54194		3/24/80	Corrective action for number of marker plates (and sign).
1.25	ALLEG			8/13/87	Relay Interference.
	ECN	NJ 20744		11/6/80	Change to be performed by issuance of FDIs. (TVA)
	Work Summary	#1927		3/29/80	Work summary of activities (Milano)
	ECN	NJ 13545		4/3/80	Change for Grout Gap.
	FDI	WARR		4/11/80	Canceled FDI, superseded by ECN 13545
2.2	ALLEG.			6/24/87	Fireproof Terminal Boards.
	WORK Summary	#2270	-	3/31/80	Work summary of activities (Milano)
2.3	ALLEG.			7/7/87	ECN Verifications.
	MEMO	#2272		4/4/80	C.L. Cotter to Unit 995 (Use DRF number per head of listing all documents)
2.6	ALLEG.			7/21/87	Drawing Discrepancy
2.8	ALLEG.			7/10/87	Incomplete ECN
	CAR	SJ-56233		4/16/80	Corrective Action Report

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	ECN	NJ-13557		4/22/80	Changes for TVA & Grand Gulf Fuel Pool area
	FDI	SRAT	0	10/17/80	Field changes for TVA
	FDI	WAMB	0	9/28/80	Field changes for Grand Gulf
	ECN	NJ-17584		4/22/80	Changes for TVA & Grand Gulf, Fuel Pool Cooling
2.10	ALLEG.			7/7/87	Shipping Per Print
	Work Summary	#2279		WEEK 8015	Work summary of activities (Milam)
2.15	ALLEG			7/7/87	Separation Signoff
	Work Summary	#2339		WEEK 8017	Work summary of activities (Milam)
	QCD	RC394		4-2-80	QA - Receipt Checklist Item 21
	QCD			4-26-80	Product Quality Certification C61-P001
2.17/2.18	ALLEG			7/7/87	Terminal Lugs
	Work Summary	# 2366		WEEK 8019	Work summary of activities (Milam)
	"	#2370		WEEK 8020	" " " " "
	ECN	NJ-17439		6/2/80	Engr's change permits temporary substitution of std term. lug
2.20	ALLEG.			9/21/87	Master Plate Drilling

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	Work Summary	#2369		WEEK 8020	Work summary of activities (Milano)
	ECN	NJ-17437		5/15/80	Change for custom size. LaSalle
	ECN	NJ-17438		6/6/80	" " " " LaSalle
	FDI	TDEJ		9/17/79	Field correction for Unit 1 LaSalle marker plates
2.21	ALLEG.				Enclosure Top Covers. (Hope Creek)
	Work Summary	#2371		WEEK 8020	Work summary of activities (Milano)
	DWG	169C 9406		6/22/79	Top Cover - Hope Creek 1&2
2.24	ALLEG				Marker plates Engraving, CAV.
	Work Summary	#2380		WEEK 8022	Work Summary of activities (Milano)
	EWA	18ABJ-1		6/24/78	Require engraving to be Spanish translated from English.
2.27	ALLEG			7/7/87	Drawing Errors.
	Work Summary	#2392		WEEK 8023	Work summary of activities (Milano)
2.31	ALLEG			7/21/87	Switch Hardware
	Work Summary	#2402 & 2404		WEEK 8024	Work summary of activities (Milano)
	QCI	PRC 81-35		7/13/82	Seismic testing to qualify mylar terminations for CR 2940 switches

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2.32	ALLEG.			7/21/87	CR 2940, Switches.
	Work Summary	#2404		WEEK 8024	Work summary of activities (Milano).
	LTR	—		6/26/87	J. M. Thompson (Cutler-Hammer) to V. Vercelos (GE) on E30 switch

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