

COMANCHE PEAK RESPONSE TEAM

RESULTS REPORT

ISAP: III.d

Title: Preoperational Testing

REVISION 1

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1.0 DESCRIPTION OF ISSUE¹

The NRC-TRT described the issues in the CPSES Safety Evaluation Report, Supplement No. 7, as follows:

"In TP Category 5, the TRT found that System Test Engineers (STEs) were not on controlled distribution for design changes applicable to systems to which they were assigned; rather, they were required to obtain this information on their own initiative from the document control center prior to starting a test and were then required to incorporate that information, as applicable, into the test procedure. While the TRT did not identify any specific problems as a result of this practice, it considers this practice to be weak since it relies too heavily on the motivations and initiatives of test personnel to ensure that they have current design information when they are developing test procedures and before conducting tests. Typically, these are periods when they could be under more than normal pressure. Additionally, because of the number and nature of the problems found in the document control system by the TRT QA/QC Group, the TRT could not reasonably conclude that the document control system problems identified did not affect testing activities." Page J-13, Item 3.2.3, "Findings for Test Program Issues."

"The TUEC Startup Group relies heavily on the accuracy and completeness of the design documents, which are included in the document control system, in its preparation of test procedures and during the conduct of testing. A number of problems were identified in the document control system by the TRT QA/QC Group during its review. While the TRT Test Program Group did not find that these problems adversely affected those portions of the testing program that it included in its review, the TRT cannot conclude with reasonable assurance that the document control system problems had no adverse effect on testing activities." Page J-14, Item 3.2.4, "Overall Assessment and Conclusions."

¹ Sections 1.0 through 4.0 of this report are reproductions of Revision 4 to the ISAP, dated February 27, 1986.

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2.0 ACTION IDENTIFIED BY NRC

The actions identified by the NRC-TRT in the CPSES Safety Evaluation Report, Supplement No. 7 at Page J-18, Item 4.2.4, "Preoperational Testing," as being necessary to resolve this issue are as follows:

"Establish measures to provide greater assurance that STEs and other responsible test personnel are provided with current controlled design documents and change notices.

Provide NRC with reasonable assurance that the document control system problems identified by the TRT QA/QC Group did not affect the testing activities."

3.0 BACKGROUND

The Startup Administrative Procedure CP-SAP-21, "Conduct of Testing," as reviewed by the NRC-TRT, stated that the STE was required to:

"Review the system drawings and applicable design changes to determine that the as-built component/system will be adequately tested by the current procedure revision to demonstrate proper component/system operation."

The TRT reviewers' concerns were twofold: (1) that this requirement may rely too heavily on an STE's motivation and initiative at the time when he is under more than normal job pressure and is expected to start testing activities and that he may not have the latest design information in his possession, and (2) that the problems identified by the NRC-TRT QA/QC Group with the Document Control Center (DCC) for construction activities may have adversely affected the testing program.

The NRC-TRT QA/QC Group's findings were specifically addressed in CPSES Safety Evaluation Report, Supplement No. 11 at Page O-10, Item 3.2.2, "Document Control Issues," as follows:

"The QA/QC Group found that prior to 1984, there were numerous recurring administrative and procedural deviations in the document control function. Many of these recurring deficiencies were identified by internal and external audits. But there was little follow up or verification by TUEC management that effective corrective actions were taken, until early in 1984 when the document control center (DCC) monitoring team began reporting to senior management. The

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current document control program, with an estimated error rate of one percent or less, was found to be adequately staffed and effective. The problem of incorrect and incomplete drawing packages appears to have been corrected.

. . .

In summary, the QA/QC Group found the current documentation control program to be acceptable. However, prior to 1984, as identified by CAT [Construction Assessment Team] and TUEC, there was a document control breakdown. Although many of the document control deficiencies have been corrected, the implication of past inadequacies on construction and inspection have potential generic significance which has not yet been fully analyzed by TUEC."

Subsequent to TUEC submitting Revision 2 of the CPRT Program Plan and ISAP to the NRC, sampling from the population described below in Section 4.1.2.4, "Prerequisite Test Population Definition," has proceeded. The original intent was to prepare one population to be sampled, screened, and evaluated for impact on both the prerequisite and preoperational test programs. The original population identified proved adequate for prerequisite testing but not for preoperational testing. The CPRT, with SRT concurrence, proceeded to prepare a separate population for the preoperational test program evaluation. The additional population prepared for the preoperational test program evaluation is described below in Section 4.1.2.5, "Preoperational Test Population Definition."

The action plan presented in Section 4.0 was developed to include a review of past and current administrative requirements for use of design documents during testing; a review of the technical test procedures utilizing the design documents; and a random sampling and evaluation program to determine the effectiveness of the administrative requirements.

4.0 CPRT ACTION PLAN

4.1 Scope and Methodology

The objective of this action plan is to resolve the two design document related issues identified by the NRC-TRT. The first issue will be investigated to determine any additional measures required to insure that STEs and other responsible test personnel are efficiently and effectively provided with

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4.0 CPRT ACTION PLAN (Cont'd)

current design documents for use in their testing activities. The second issue will be investigated to determine if the problems with DCC identified by the NRC-TRT QA/QC Group had an adverse affect on the testing program activities.

The individual objectives and tasks for each issue are discussed separately below.

4.1.1 STE's Access to Current Design Documents

This task will determine if administrative procedures and work practices by the Startup and DCC organizations are adequate to provide for the use of current design documents in the performance of testing activities, and to identify additional requirements, if any, which need to be established to ensure compliance with this requirement.

The steps required to complete this task are: reviewing the Startup Administrative Procedures as they relate to use of current design documents; reviewing the organizational interface and work practices between the Startup and DCC organizations; and interviewing individual STEs.

4.1.1.1 Startup Administrative Procedure Review

Review Startup administrative procedures to determine if practices are likely to lead to a programmatic discrepancy. The procedures will be reviewed to determine when administrative requirements need to be applied to the use of design documents, that the requirements are clearly stated, and indicate the timeliness for use of current design documents. The CPRT will perform this review.

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4.1.1.2 Startup and DCC Interface

Review the organizational interfaces and work practices between the Startup and DCC organizations which are applicable to the acquisition and use of current design documents. Determine the adequacy of past and present practices in meeting the requirements of the testing program. Identify and implement improvements if required. The CPRT will perform these reviews.

4.1.1.3 System Test Engineer Interviews

Interview System Test Engineers to determine their methods of complying with the current design document requirement and to further assess the need to upgrade existing procedures and methods. The CPRT will conduct these interviews.

4.1.2 Potential for DCC Problems to Adversely Affect the Testing Program

This task will evaluate the effect of DCC problems identified by NRC-TRT QA/QC Group on the testing program by determining the Startup organization's response to properly authorized design changes initiated by Engineering, processed through the DCC organization, and requiring a testing response by Startup.

The Startup organization utilizes drawings as a primary resource in the preparation of technical test procedures and the execution of testing. Other resources are used, however they are not controlled by the DCC. Startup responds to three methods of changing the design by Engineering. The three Engineering design change procedures are: direct issuance of a revision to a design drawing which does not incorporate the other two methods; issuance of a Design Change Authorization (DCA) which is a design drawing change described in approved documents issued temporarily until the actual design drawings may be updated and issued; and issuance of a Component Modification Card (CMC) which is similar to the DCA.

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4.0 CPRT ACTION PLAN (Cont'd)

An evaluation program will be developed and performed which will focus on opportunities for a DCC error to begin a chain of events which results in a testing error. Error opportunities involve design changes, communicated by way of changes to design documents distributed and controlled by DCC, where the design change created a need to change a test procedure, perform retesting, or perform additional testing. This type of evaluation was designed to preclude the nature of DCC errors from affecting the results.

The Startup organization utilizes only a fraction of the design documents prepared for the project. This subset of design documents and the changes to them are easily identified and the boundaries of a valid population of design changes readily established.

The CPRT decided that a sampling program to resolve this issue would be appropriate because there are no programmatic deficiencies identified to date, the criteria by which they will be evaluated in this study will be the same, the population of items to be sampled is homogeneous (i.e., the process by which these items are handled by the DCC is the same), and thus a sampling program in accordance with Appendix D will aid in determining whether or not systematic discrepancies exist.

The potential adverse effect of the DCC problems identified by the NRC-TRT QA/QC Group on the testing programs will be evaluated by: determining a calendar interval when DCC problems could have adversely affected startup; identifying and reviewing procedures and instructions which utilized DCC controlled design documents; defining the population of changes to the design documents; random sampling the population of changes; and evaluating the sampled design changes for adverse effects on the prerequisite and preoperational test programs.

The steps which are required to accomplish this task are described below:

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4.0 CPRT ACTION PLAN (Cont'd)

4.1.2.1 Period of Interest

Determine the period of interest during which Startup could have been adversely affected by DCC problems. This period will begin at the start of prerequisite testing by Startup and the end date will be based on the results of CPRT review and assessment of CPSES Monitors Team monitoring reports of DCC performance. These same reports were utilized by the NRC-TRT in their evaluations.

4.1.2.2 Prerequisite Test Instruction Review

All prerequisite test instructions will be reviewed to determine the types of design documents controlled by DCC which were used during the execution of prerequisite testing. All design documents of this type will be included in the prerequisite test population. The CPRT will perform this review.

4.1.2.3 Preoperational Test Procedure Review

All preoperational test procedures performed during the period of interest and not completely reperformed thereafter will be reviewed to identify the design documents referenced by the test procedures and controlled by DCC. The design documents identified will be included in the prerequisite test population. A preoperational test sub-population will be identified from this list of referenced design documents. This review will be performed by the CPRT.

4.1.2.4 Prerequisite Test Population Definition

The population of all design drawing revisions, all DCAs, and all CMCs issued during the period of interest and used by the Startup organization in the preparation of test procedures or during the execution of testing will be identified. The CPRT will

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identify the prerequisite population with assistance from TUGCO Nuclear Engineering. Preliminary estimates indicate that the population will include approximately 75,000 items.

4.1.2.5 Preoperational Test Population Definition

The preoperational test population will be identified from the design document reference list created by Section 4.1.2.3 which includes only the flow diagrams and control circuit schematic diagrams. In the hierarchy of engineering design documents, these two classes of drawings will have the most significant influence on preoperational testing. This population will be identified by the CPRT. Preliminary estimates indicate that the population will include approximately 1,100 items.

4.1.2.6 Population Screening Criteria

Each document change in the prerequisite and preoperational test populations will be screened until it meets the following criteria:

- The change is to a design document.
- The change is issued through DCC.
- The document is referenced by a test procedure or is used during the performance of a specific test.
- The test procedures which reference or utilize the affected documents were performed during the period of interest and were not completely reperformed following the period of interest.
- The document change occurred prior to performance of the test.

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4.0 CPRT ACTION PLAN (Cont'd)

- The change would require a test or retest.

The CPRT will perform the evaluations with assistance from TUGCO Startup.

4.1.2.7 Sample Evaluation

After random selection and screening, testing records will be examined for each sample item to determine the following:

- Whether a test was conducted by Startup per the change, or
- Whether Startup documentation demonstrated they were aware of the change.

A negative finding in both cases will constitute a discrepancy. The CPRT will perform the evaluations with assistance from TUGCO Startup.

- 4.1.3 Identified discrepancies, if any, will be processed according to Appendix E, "CPRT Procedure for the Classification and Evaluation of Specific Design or Construction Discrepancies Identified by CPRT." Corrective action, if required, will be implemented according to Appendix H, "CPRT Procedure for the Development, Approval, and Confirmation of Implementation of Corrective Action."

4.2 Participants Roles and Responsibilities

4.2.1 Organizations involved

- 4.2.1.1 CPSES Startup Group
- 4.2.1.2 TUGCO Nuclear Engineering Group
- 4.2.1.3 CPRT Testing Programs Review Team

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4.0 CPRT ACTION PLAN (Cont'd)

4.2.2 Scope for each Organization

4.2.2.1 CPSES Startup Group

- Revise Startup Administrative Procedures and instruct STEs on new procedure requirements,
- Implement corrective actions resulting from the CPRT investigation into the effect on testing due to DCC problems, and
- Provide qualified personnel to assist in the screening and sample evaluation.

4.2.1.2 TUGCO Nuclear Engineering Group

- Provide engineering drawing history data for sample preparation.

4.2.2.3 CPRT Testing Programs Review Team

- Evaluate the CPSES document control program and applicable Startup Administrative Procedures and control methods,
- Review and concur with applicable Startup Administrative Procedures revision,
- Determine whether the testing program has been adversely affected by DCC problems and specify corrective actions, if necessary, and
- Overview the work performed by other organizations assisting CPRT.

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4.0 CPRT ACTION PLAN (Cont'd)

4.2.3 Lead Individuals

4.2.3.1 Mr. S. M. Franks CPSES Startup Group

4.2.3.2 Mr. J. E. Rushwick CPRT Testing Programs
Review Team Leader

4.3 Personnel Qualifications

4.3.1 The CPRT Testing Programs Review Team Leader meets the qualifications as described by the CPRT Program Plan.

4.3.2 The Startup personnel participants will be qualified in accordance with CP-SAP-19, "Training/Qualification Requirements for Startup Personnel."

4.3.3 The Review Team Leader assures that other personnel providing assistance are qualified.

4.4 Procedures

The following procedures will govern revision of Startup Administrative Procedures:

CP-SAP-1, Startup Administrative Procedures Manual

CP-SAP-21, Conduct of Testing

4.5 Acceptance Criteria

The acceptance criteria for the two investigated issues are discussed below:

4.5.1 STEs Access to Current Design Documents

The procedures and methods are adequate to the satisfaction of the Testing Programs Review Team Leader to assure that STEs and other responsible test personnel are cognizant of and are provided with current design documents. This finding must be supported by the results of random sampling and evaluation of the use of design change documents.

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4.0 CPRT ACTION PLAN (Cont'd)

4.5.2 Potential for DCC Problems to Adversely Affect the Testing Program

In order for DCC problems identified by the NRC-TRT QA/QC Group to be judged to have had no adverse effect on preoperational or prerequisite testing, a properly selected, screened, and evaluated design change document sample must meet the following criteria:

4.5.2.1 Prerequisite Test Program

The design change was tested as evidenced by approved test data or was documented as being monitored by Startup as an open item.

4.5.2.2 Preoperational Test Program

A preoperational test procedure incorporated the design change or was documented as being monitored by Startup as an open item.

4.6 Decision Criteria

4.6.1 STE's Access to Current Design Documents

The administrative procedure(s) are satisfactory or, if necessary, are revised to the satisfaction of the Testing Programs Review Team Leader and concurred with by the Senior Review Team.

4.6.2 Potential for DCC Problems to Adversely Affect the Testing Program

The objective of the random sampling and evaluation program is to provide reasonable assurance that the problems identified by the NRC-TRT did not, in fact, adversely affect the test program. If one or more discrepancies are found to have adversely affected the test program an expanded investigation will be undertaken in accordance with Appendices D and E.

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5.0 IMPLEMENTATION OF ACTION PLAN AND DISCUSSION OF RESULTS

The following sections present a summary of action plan implementation and specific discussions of the results of each issue investigated.

5.1 Summary of Action Plan Implementation

The NRC-TRT issues were investigated by a combination of administrative procedure, organizational interface, and test procedure review; interviews with personnel; and random sampling and evaluation. To perform these analyses, the CPRT reviewed approximately 6000 documents which consisted of administrative procedures, test procedures, drawing revisions, design change documents, and audit reports.

5.2 STE Access to Current Design Documents

The CPRT reviewed the Startup Administrative Procedures and the Startup and DCC organizational interface, and interviewed individual STEs. The requirements for administration of the test program with regard to the use of current design information were evaluated during these reviews.

5.2.1 Startup Administrative Procedure Review

Prior to the CPRT review of the Startup administrative procedures, TUGCO Startup had revised administrative procedures and initiated required retraining of personnel in response to the NRC letter of September 18, 1984. The CPRT reviewed the Startup administrative procedures in effect as of September, 1985, to determine where the activity being controlled needs administrative requirements applied to the use of design documents, if the requirements are clearly stated, and if they indicated the timeliness for the use of current design documents. With respect to the above criteria, the Startup administrative procedures are adequate.

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5.0 IMPLEMENTATION OF ACTION PLAN AND DISCUSSION OF RESULTS (Cont'd)

5.2.2 Startup and DCC Organizational Interface Review

The NRC-TRT implied that each STE should have a controlled-distribution copy of drawings and design change documents applicable to the STE's assigned systems. With this concept in mind, the CPRT reviewed the history of the Startup DCC satellite and the evolution of the methods by which the Startup and DCC organizations attempted to provide convenient access to current design documents. The following presents the results of this review.

Prior to April 1983, the control and distribution of design documents was centralized in the main DCC facility. The main DCC provided design document duplication and distribution services to all the construction related organizations onsite. The STEs found this process burdensome in that the main DCC was remote from their work location and the process was time consuming and unresponsive to their specific needs. In April 1983, the specific needs of the Startup organization, and others, were more adequately addressed by establishing DCC satellites, subordinated to the main DCC, in close proximity to each organization's place of work.

The first DCC satellite was established in the Startup facility. Initially, the DCC satellite provided the STEs with controlled-distribution drawings of their choice. After approximately one year, a review was conducted of the control of these drawings. The review found that the system was working; however, the system was cumbersome and an administrative burden on each organization. The DCC satellite had approximately 20,000 controlled drawings and design change documents distributed throughout the Startup facility. DCC satellite personnel were required to replace and destroy superseded documents. STEs were held accountable for an item-by-item inventory of these documents. DCC and Startup supervision decided to eliminate controlled-distribution drawings to individual STEs due to the administrative burdens placed on both organizations.

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5.0 IMPLEMENTATION OF ACTION PLAN AND DISCUSSION OF RESULTS (Cont'd)

In April 1984, Startup and DCC supervision elected to provide libraries of controlled-distribution drawings to those Startup groups performing similar activities, to provide independent user libraries within the facilities, and to expand the reference facilities near the Startup DCC satellite area.

As an example, the electrical and hydrostatic test groups established reference libraries within their separate office areas. The controlled-distribution drawings and design change documents within these libraries are maintained current by DCC satellite personnel. The libraries contain copies of the current controlled-distribution drawings and design change documents required to perform their respective testing activity.

5.2.3 STE Interviews

Discussions were held with eight individual STEs out of approximately sixty to determine their methods of reviewing design documents and incorporating the current design information into preoperational test procedures. The STEs were selected from the Balance of Plant; Electrical; Nuclear Steam Supply; Instrumentation and Controls; and Heating, Ventilating, and Air Conditioning disciplines. For the most part, the STEs performing the largest number of preoperational tests in each discipline were selected. Seven STEs stated that their method for handling design document changes was to present a list of drawings to DCC, receive a current status report, obtain changed documents, and review and incorporate appropriate changes into the preoperational test procedures. The eighth STE's procedures were written and approved to the most current design documents and performed immediately thereafter, precluding an impact by design changes. From the uniformity of the interview responses, it was concluded that document review offered more useful information relative to the issues being addressed, and the CPRT decided not to continue interviewing.

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5.0 IMPLEMENTATION OF ACTION PLAN AND DISCUSSION OF RESULTS (Cont'd)

5.2.4 Conclusions

The CPRT concluded that the Startup and DCC organizations have established sufficient measures to assure that STEs and other responsible personnel are provided access to controlled design documents. This conclusion is based upon reviewing the startup administrative procedures; the Startup and DCC organizations' previous experience with STEs having controlled-distribution drawings for their assigned systems; the establishing of libraries within the Startup facilities; and the results of the random sampling and evaluation program.

It should be noted that the results of the CPSES Monitors Team activity and DCC supervisory personnel contributions to improving the performance of DCC, combined with establishing DCC satellite distribution centers for user convenience, have contributed to alleviating the previous burden placed upon the STEs. Of further note is Engineering's self-established limitation on the number of design change documents which may be outstanding against a drawing at any given time. This factor alone contributed significantly to alleviating the previous problems for STEs.

5.3 Potential For DCC Problems to Adversely Affect the Testing Program

The objective of this task was to evaluate the effect the DCC problems had on the testing program by determining whether the Startup organization was cognizant of authorized design changes initiated by Engineering. Cognizance was measured by looking for the approved test data for the design change in TUGCO's records vault, or by the design change being logged in an approved Startup tracking system. This evaluation was designed to preclude the nature of DCC errors from affecting the results by examining only the origin and destination of a design change.

Due to the large number of design changes and the similarity in the process by which they were handled by the DCC, a random sample review of these documents was deemed by the CPRT to be an appropriate method of investigation of potential programmatic deficiencies. A random sample of authorized design changes requiring Startup's cognizance was selected for review in accordance with Appendix D, "CPRT Sampling Policy, Applications and Guidelines."

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5.0 IMPLEMENTATION OF ACTION PLAN AND DISCUSSION OF RESULTS (Cont'd)

The Startup organization utilizes only a fraction of the design documents prepared for the project. This subset of design documents and the changes to them were identified by the following steps: first, the calendar interval when DCC problems could have adversely affected startup was determined; second, the procedures and instructions which utilized DCC controlled design documents were identified and reviewed; and finally, this information was used to define the population of changes to the design documents affecting Startup.

5.3.1 Period of Interest

The period of interest during which DCC problems could have adversely affected prerequisite testing was defined as the start of testing in mid-1979 until May 15, 1984. The period of interest for preoperational testing was from JTG approval of the specific preoperational test procedure until May 15, 1984. May 15, 1984 was decided upon by the Testing Programs Review Team by evaluating CPSES Monitors Team reports to assess the effectiveness of the Startup DCC satellite.

The CPSES Monitors Team was an auditing group established by TUGCO management at the same time the DCC satellites were created. The purpose of the group was to monitor the effectiveness of the document control systems. The Monitors Team continues to perform its audit function.

The CPSES Monitors Team reports were also utilized by the MRC-TRT QA/QC Group in their evaluations and were their basis for making the judgment that in July 1984, the DCC satellites supporting the construction organization appeared to be working properly.

5.3.2 Prerequisite Test Instruction Review

Each of the thirty-two prerequisite test instructions in existence at the start of implementation of this ISAP were reviewed to identify those which required utilization of design documents during the testing activity. From this review, the types of project design documents used in preparation and execution of prerequisite test instructions were determined. This information was utilized in identification of the prerequisite test population of design changes.

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5.3.3 Preoperational Test Procedure Review

All preoperational test procedures were reviewed to determine which test procedures were performed during the period of interest and not completely reperformed after May 15, 1984. The preoperational test procedures which met these criteria were identified. The design drawings referenced by these procedures and controlled by DCC were identified. These referenced drawings were used to assist in the identification of the preoperational test population of design changes.

5.3.4 Prerequisite Test Population Identification

The prerequisite test population was identified by examining the types of Project design documents, examining the project design change methods, and uniquely identifying each design change in the population.

The design documents for the project include such documents as correspondence, calculations, analyses, reports, drawings, sketches, and specifications. These design documents are generated by various engineering disciplines such as architectural, civil, structural, mechanical, electrical, instrumentation and control, etc. These same design documents are utilized for various purposes by different organizations such as electrical construction versus electrical QA/QC, or civil/structural construction versus Startup testing. By examining the types of design documents required for test procedure preparation and/or execution, the specific types of design documents utilized by Startup were identified and included in the population. Several examples of the types of design documents included in the population are mechanical and electrical specifications, flow diagrams, instrument and control logic diagrams, electrical three line diagrams, and electrical connection diagrams. Several examples of the types of design documents which were not an essential element of the testing activities and were excluded from the population are the architectural, civil, and structural design drawings and specifications.

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The Startup organization utilizes design documents as the primary resource in the preparation of test procedures and the execution of testing. Startup responds to three design change methods used by Engineering. The three Engineering design change procedures are: direct issuance of a revision to a design drawing; issuance of a Design Change Authorization (DCA) which is a design document change issued prior to the actual design drawings being updated and issued; and issuance of a Component Modification Card (CMC) which is similar to the DCA, but site oriented.

The design change population contained changes initiated by revision of Gibbs & Hill/TUGCO Nuclear Engineering drawings, by DCA, and by CMC. Engineering specifications were changed by DCA and were in the DCA change subpopulation.

5.3.5 Prerequisite Test Population Screening Process

The following screening criteria were used to identify design changes belonging to the prerequisite test population:

- The change was to a design document.
- The change was issued through the DCC.
- The document was referenced by a test procedure or was used during the performance of a specific test.
- The test procedures which referenced or utilized the affected documents were performed during the period of interest.
- The document change occurred prior to performance of the test.
- The change required a test or retest.

Drawing revisions which were issued to incorporate only DCAs or CMCs were excluded to preclude biasing the population by multiple references to a particular design change.

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5.0 IMPLEMENTATION OF ACTION PLAN AND DISCUSSION OF RESULTS (Cont'd)

During screening, the CPRT found that design changes were initiated, logged, and tracked by the TUGCO Design Change Request (TDCR). The TDCR is a Startup procedure which seeks Engineering review and approval of a proposed change to the design. Since Startup initiated and tracked these changes, they were excluded from the sample.

5.3.6 Prerequisite Test Sampling Results

A sample consisting of sixty-one approved design changes requiring Startup to perform a test was evaluated. The evaluation showed that each of these sixty-one samples met the following acceptance criteria:

The design change was tested as evidenced by approved test data, or was documented as being monitored by Startup as an open item.

An open item means the design change was documented as being logged in a Startup organization tracking system, i.e., a tracking system such as the Master Data Base, or Startup Work Authorization log. Since no discrepancies were identified during the evaluation, the sample size was not expanded.

5.3.7 Preoperational Test Program Population Definition

In the overall organization of engineering drawings, the flow and control circuit schematic drawings are the definitive design documents specifying system and component functionality; the other engineering drawings are required to implement the design presented in these drawings. The objective of preoperational testing is to test and verify system and component function. Based on this, it was determined that changes to the control circuit schematic and flow diagrams would have the greatest potential impact on a preoperational test.

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5.0 IMPLEMENTATION OF ACTION PLAN AND DISCUSSION OF RESULTS (Cont'd)

The preoperational test population was therefore identified from the list of referenced drawings prepared during the review of preoperational test procedures conducted prior to May 15, 1984 and not completely reperfomed after that date. The final preoperational test population contained the flow and control circuit schematic diagrams identified from this list.

5.3.8 Preoperational Test Population Screening Process

The following screening criteria were used to identify design changes belonging to the preoperational test population:

- The change is to a design document.
- The change is issued through DCC.
- The document is referenced by a test procedure or is used during the performance of a specific test.
- The test procedures which reference or utilize the affected documents were performed during the period of interest and were not completely reperfomed following the period of interest.
- The document change occurred prior to performance of the test.
- The change would require a test or retest.

5.3.9 Preoperational Test Sampling Results

A sample consisting of sixty approved design changes requiring a test by Startup was evaluated. The evaluation showed that each of these sixty samples met the following acceptance criteria:

A preoperational test procedure incorporated the design change, or was documented as being monitored by Startup as an open item.

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An open item means the design change was documented as being logged in a Startup organization tracking system, i.e., a tracking system such as the Master Data Base, or Startup Work Authorization log. Since no discrepancies were identified during the evaluation, the sample size was not expanded.

5.4 Evaluation of Results

The CPRT implemented the tasks in the action plans and measured the results against the acceptance criteria.

5.4.1 STE Access to Current Design Documents

The CPRT evaluation verified that TUGCO has established measures to provide reasonable assurance that STEs and other responsible test personnel are provided with current controlled design documents and changes. The sampling and evaluation program confirmed that, during the period of concern, the STEs did use current design documents in the conduct of both preoperational and prerequisite testing activities.

5.4.2 Potential For DCC Problems to Adversely Affect the Testing Program

The CPRT evaluation provided ninety-five percent confidence that at least ninety-five percent of the design changes which could have affected the prerequisite and preoperational testing due to document control center problems did not adversely affect these programs.

5.5 Root Cause and Generic Implications

The potential generic implications of document control problems were that Startup testing activities may have been adversely affected such that safety-related plant systems and components may not be properly tested. This evaluation determined that the Startup organization was using effective methods for the use of design documents and was not adversely affected by the document control problems. Consequently, root cause and generic implication evaluations were not necessary.

RESULTS REPORT

ISAP III.d
(Cont'd)

6.0 CONCLUSIONS

The CPRT concluded that the Startup and DCC organizations have established sufficient measures to assure that STEs and other responsible personnel are provided access to controlled design documents.

The results of this evaluation provide reasonable assurance that the document control problems which existed prior to 1984 did not adversely affect the testing program.

7.0 ONGOING ACTIVITIES

There are no ongoing activities related to this issue.

8.0 ACTION TO PRECLUDE OCCURRENCE IN THE FUTURE

Based upon the CPRT review, there is no further action required to preclude future occurrence.