

DESIGN ADEQUACY PROGRAM  
QUALITY ASSURANCE PROGRAM

Rev	Recommended	QA Concurrence	Approval
0	<p><i>[Signature]</i> DAP Manager</p> <p><i>[Signature]</i> CSM-TRT Issue Manager</p>	<p><i>[Signature]</i> DAP QA Manager</p>	<p><i>[Signature]</i> Review Team Leader</p> <p><u>10/1/85</u> Date</p>
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## 1.0 ORGANIZATION

### 1.1 Comanche Peak Response Team (CPRT)

The CPRT organization and its functional responsibilities are described in Section VI of the CPRT Program Plan. The CPRT is led by a Senior Review Team which formulates policy and provides overall direction of CPRT activities. The Design Adequacy Review Team Leader, along with the Review Team Leaders for QA/QC; Civil, Structural, Mechanical; Electrical/Instrumentation; and Testing Programs report to the Senior Review Team. A CPRT Program Director, who also report to the Senior Review Team, is responsible for monitoring the Review Team activities on day-to-day basis.

### 1.2 Design Adequacy Review Team

The Design Adequacy Review Team has been assigned the responsibility of implementing the Design Adequacy Program Plan, Appendix A of the CPRT Program Plan, and the associated issue or Discipline Specific Action Plans. TERA Corporation, under the direction of its Design Adequacy Review Team Leader, has been assigned the responsibility for managing and performing the Design Adequacy Program activities.

Assisting the Design Adequacy Review Team Leader is the Design Adequacy Program Manager, Project Management Coordinator, and the Construction Quality Interface Manager. Reporting to the Design Adequacy Program Manager are the Project Quality Engineer and the Discipline Coordinators in the following disciplines:

- o Civil/Structural
- o Piping/Supports
- o Mechanical Systems and Components
- o Electrical, I&C Systems and Components
- o Programmatic/Generic Implications.

The Design Adequacy Review Team organization is shown in Figure 1.

The Design Adequacy organization also includes a Design Adequacy Program Quality Assurance Manager. This position is responsible for ensuring the effective implementation of the Design Adequacy Program Quality Assurance Program. The Quality Assurance Manager will verify effective implementation of the program by conducting audits of Design Adequacy Review Team activities. The Quality Assurance Manager will report the results of his activities to the Design Adequacy Review Team Leader. This structure provides access to a level of management sufficient to ensure that the quality assurance function can be performed.

The responsibilities of the Design Adequacy Review Team Leader are delineated in Section VIII of the CPRT Program Plan. Design Adequacy Review Team Managers and Coordinators are responsible for assisting the Review Team Leader as directed by the Review Team Leader and as specified in Section II.E of Appendix A to the CPRT Program Plan and the Design Adequacy Procedures.

The organization chart (Figure 1) also shows the Engineering Manager, Systems Engineering Manager, and DAP Site Manager. All three of these positions have responsibilities for cost, schedule, and other project management functions, but do not have quality assurance responsibilities defined in this program and the DAP procedures.

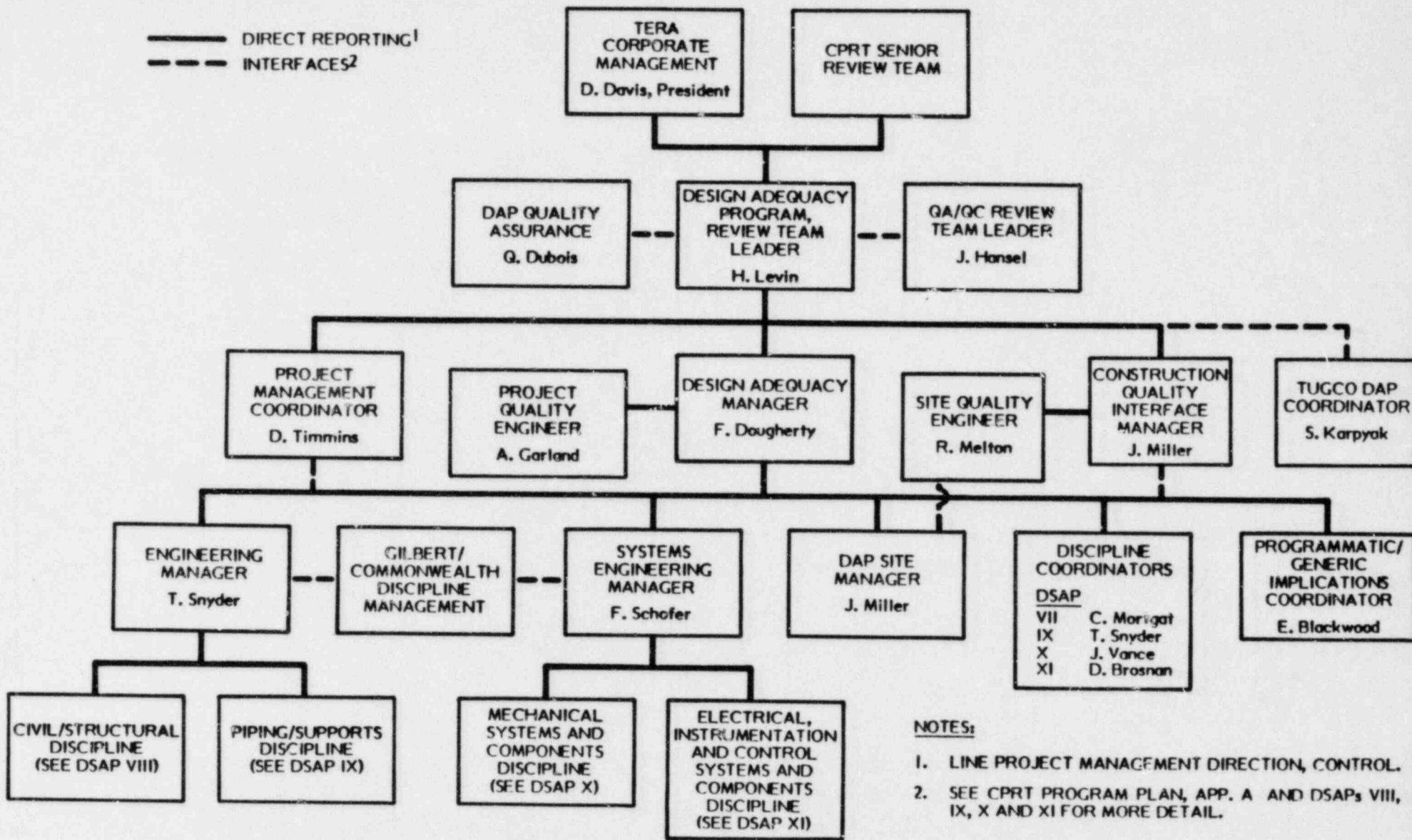
The Design Adequacy Review Team may use subcontractors to implement its Quality Assurance Program; however, the Design Adequacy Review Team retains responsibility for implementation of the program.



ATTACHMENT 6

CPRT DESIGN ADEQUACY PROGRAM ORGANIZATION

—— DIRECT REPORTING<sup>1</sup>  
 - - - INTERFACES<sup>2</sup>



NOTES:

1. LINE PROJECT MANAGEMENT DIRECTION, CONTROL.
2. SEE CPRT PROGRAM PLAN, APP. A AND DSAPs VIII, IX, X AND XI FOR MORE DETAIL.

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## 2.0 QUALITY ASSURANCE PROGRAM

### 2.1 Design Adequacy Review Team Quality Assurance Program Description

The CPRT Program Plan, which was developed under the direction of the Senior Review Team, provides overall direction for all CPRT activities. Appendix A of the CPRT Program Plan is the Design Adequacy Program Plan which details the scope of work for Design Adequacy Review Team activities. Appendix C of the CPRT Program Plan contains Discipline Specific Action Plans (DSAPs) which specify how external source issues and self-initiated programs are to be investigated, evaluated, and/or performed by the CPRT Review Teams. This Quality Assurance Program details the quality assurance requirements which will be applied to the work conducted by the Design Adequacy Review Team. In order to implement the requirements of the CPRT Program Plan and its appendices and this Quality Assurance Program, Design Adequacy Procedures (DAPs) have been established. Table 1 lists the Design Adequacy Procedures.

The Quality Assurance Program elements applicable to Design Adequacy Review Team activities, as defined in this Quality Assurance Program, are Organization, QA Program, Design Control, Procurement Document Control, Instructions, Procedures and Drawings, Document Control, Control of Purchased Material, Equipment and Services, Nonconforming Materials, Parts or Components, Corrective Action, QA Records, and Audits.

Should activities be necessary in the areas of Inspection, Testing or Measuring, and Test Equipment, appropriate quality assurance will be provided through performance of those activities by CPRT Review Teams or subcontractors with applicable quality assurance programs. Design Adequacy Review Team interfaces with other CPRT Review Teams and subcontractors are defined in Design Adequacy Procedures.

Table 2 is a matrix which cross references each of the applicable QA Program elements to sections of this QA Program as well as to the Design Adequacy Procedures that implement the QA Program.

TABLE I  
 CPRT DESIGN ADEQUACY PROGRAM  
 PROCEDURES

<u>Procedure Number</u>	<u>Title</u>
DAP-1	Preparation and Review of Criteria Lists
DAP-2	Documentation and Tracking of Issues and Discrepancies
DAP-3	Development and Validation of Self-Initiated Review Scope
DAP-4	Preparation of Checklists
DAP-5	Review of Calculations, Evaluations, and Other Implementing Documents
DAP-6	Review of Drawings, Specifications, and Other Design Output Documents
DAP-7	Trending and Generic Implications Evaluations
DAP-8	Preparation of Engineering Evaluations
DAP-9	Preparation of Discipline Specific Results Reports and DAP Collective Evaluation Report
DAP-10	Development and Use of DAP Procedures and Discipline Instructions
DAP-11	Document Control
DAP-12	DAP Interfaces and Communications
DAP-13	Preparation of Calculations
DAP-14	Design Adequacy Program Records
DAP-15	Training and Qualifications
DAP-16	Audits
DAP-17	Corrective Action
DAP-18*	Control of Subcontractor
DAP-19	Processing and Review of Information between the Quality of Construction, QA/QC Adequacy Program and Design Adequacy Program
DAP-20	Overview of DAP Activities Performed by the CCSES Project or Other External Organizations
DAP-21	Homogeneous Design Activity Validation and Selection of Specific Items for Review
DAP-22	Preparation of Safety Significance Evaluations

\* To be issued if necessary

TABLE 2

DESIGN ADEQUACY REVIEW TEAM  
 QUALITY ASSURANCE MATRIX

QA Program Elements	QA Program Section	Design Adequacy Procedures (DAPs)
Organization	1.0	DAP-12, 19
QA Program	2.0	DAP-15, 19
Design Control	3.0	DAP-1, 2, 3, 4, 5 6, 7, 8, 9, 13, 22
Procurement Document Control	4.0	DAP-18
Instructions, Procedure and Drawings	5.0	DAP-4, 10
Document Control	6.0	DAP-11
Control of Purchased Material, Equipment and Services	7.0	DAP-18
Non-Conforming Material, Parts or Components	8.0	DAP-17
Corrective Action	9.0	DAP-17
QA Records	10.0	DAP-14
Audits	11.0	DAP-16



2.2 Indoctrination and Training of Design Adequacy Personnel

Overall requirements for CPRT personnel qualifications are contained in Section VII of the CPRT Program Plan. Detailed requirements for the indoctrination and training of Design Adequacy Review Team Personnel are contained in DAP-15, Training and Qualifications. Audit personnel are discussed in Section II of this QA Plan. Qualifications of personnel other than auditors (excluding clerical and administrative personnel) are reviewed by the Design Adequacy Review Team Leader to verify that education, experience, and qualifications are adequate to perform the assigned tasks.

2.3 Review of Adequacy of the Design Adequacy Review Team Quality Assurance Program

As discussed in Section II of this QA Program, periodic audits of Design Adequacy Review Team activities will be conducted to verify proper implementation of the QA Program. Additional reviews of the QA Program may be conducted by Design Adequacy Review Team Management or other CPRT organizations. The results of such reviews shall be considered with respect to their assessment of QA Program status and adequacy.

2.4 NRC Regulations and Industry Standards

This QA Program was developed considering the Quality Assurance Criteria specified in Appendix B to 10CFR50. In addition the following industry standards are considered applicable to this QA Program as discussed in the associated QA Program section:

<u>Standard</u>	<u>QA Plan Section</u>
ANSI N45.2.11, Design Control	3
ANSI N45.2.23, Qualifications of Audit Personnel	11

Other standards, referenced in the standards listed above, are not endorsed unless stated otherwise in this QA Program.

### 3.0 DESIGN CONTROL

The scope of Design Adequacy Review Team activities includes verifying the adequacy of specified elements of the CPSES design. These elements are specified by Discipline Specific Action Plans (DSAPs) developed to address design concerns identified by, or through CPRT evaluation of, External Sources as well as by CPRT Self-initiated design evaluations.

The Design Adequacy Review Teams design verification activities closely parallel the Design Verification requirements specified in Section 6 of ANSI N45.2.11, 1974. Design verification activities include the preparation of criteria lists and checklists, review of calculations, evaluations and inputs, confirmation of appropriate quality and quality assurance requirements where specified, and alternate calculations. The design verification activities shall be conducted in accordance with written procedures and by personnel other than those who performed the original design or design verification. Currently, the Review Team does not intend to use qualification testing as a design verification method. Therefore, no DAP has been developed to control qualification testing.

The results of the design verification activities shall be clearly documented in accordance with procedures. The results will be reviewed by personnel other than those performing the design verification prior to final approval.

### 4.0 PROCUREMENT DOCUMENT CONTROL

The Design Adequacy Review Team will ensure that appropriate quality assurance requirements are included in procurement documents for services relating to Design Adequacy Review Team activities or that those services are provided subject to the requirements of this QA Program.

Procurement documents prepared shall be reviewed by the Design Adequacy Program Quality Assurance Manager. They are also reviewed for proper technical content by the Design Adequacy Review Team Leader or his designated representative. The reviews conducted by the Quality Assurance Manager and the Design Adequacy Review Team Leader are appropriately documented. Currently, any contracted services will be performed under the total requirements of this QA Program. Should it become necessary to contract services controlled under other QA requirements, DAP-18 will be issued to ensure that appropriate QA requirements are specified in procurement documents.

#### 5.0 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Measures have been established to ensure that Design Adequacy Review Team Activities are conducted in accordance with written procedures or instructions. These procedures are developed as needed and, where appropriate, include acceptance criteria. The specific procedures controlling the preparation, revision, review, and approval of Design Adequacy procedures, checklists, and instructions are:

- o DAP-4 - Preparation of Checklists
- o DAP-10 - Development and Use of DAP Procedures and Discipline Instructions.

#### 6.0 DOCUMENT CONTROL

The Design Adequacy Review Team has established controls for the issuance, distribution, and use of Design Adequacy Procedures and instructions. Written procedures specify controls to ensure that the latest revisions of these documents are used by Design Adequacy Review Team personnel in the conduct

of the work. In addition, procedures controlling revisions to procedures and instructions (Section 5.0 above) require that such revisions receive the same level of review as the originals.

#### 7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

Subcontracted services employed by the Design Adequacy Review Team will either be performed subject to the total requirements of this QA Program or subject to quality assurance program requirements specified in the procurement documents. Currently, any contracted services will be performed under the total requirements of this QA Program. Should it become necessary to contract services controlled under other QA requirements, DAP-18, Control of Subcontractors, will be issued with appropriate measures to ensure that contracted services are provided in accordance with procurement requirements.

#### 8.0 NON-CONFORMING MATERIAL, PARTS, OR COMPONENTS

Non-conforming design practices or documentation identified by the Design Adequacy Review Team during its design verification activities are documented on Discrepancy Reports as specified in DAP-2, Documentation and Tracking of Issues and Discrepancies Reports. These Discrepancy Reports are used by the Design Adequacy Review Team only for evaluation purposes. Copies of all Discrepancy Reports will be submitted to TUGCO for evaluation and processing under its non-conformance control system.

## 9.0 CORRECTIVE ACTION

The Design Adequacy Review Team has developed a written procedure, DAP-17, Corrective Action, to control the disposition of identified nonconformances associated with the Review Team's activities. DAP-17 includes requirements for the resolution of such nonconformances and the notification of affected organizations. Identified nonconformances as well as corrective action taken are documented and reported to appropriate levels of Design Adequacy Review Team management.

## 10.0 QA RECORDS

DAP-14, DAP Records, has been established to control the collection, storage and retention of records developed as a result of Design Adequacy Review Team activities. At the completion of the work, Design Adequacy Review Team records shall be turned over the CPRT Program Director. Records are identifiable and retrievable and include the following:

- o Discrepancy Reports
- o Discipline Specific Results Reports
- o DAP Collective Evaluation Report
- o QA Audit Reports
- o Personnel Training and Qualification Records
- o Checklists, Calculations and Engineering Evaluations.

## 11.0 AUDITS

The Design Adequacy Program Quality Assurance Manager schedules and conducts planned and periodic audits of Design Adequacy Review Team

activities. Auditable requirements include those requirements defined in the CPRT Program Plan and Appendices, this QA Plan, and applicable DAPs. The audits shall be conducted in accordance with DAP-16, Audits, by the DAP Quality Assurance Manager or personnel reporting to him. The person performing the audit, or leading the audit, if more than one person is on the audit team, shall be qualified to the requirements of ANSI N45.2.23, Sections 2.3.1 through 2.3.4 for Lead Auditors. The results of audits shall be documented and provided to the Design Adequacy Review Team Leader for his review.