



Operational Interface Control Drawing Procedure for STE-LSE, Shenandoah

George S. Kinoshita

Prepared by Sandia Laboratories, Albuquerque, New Mexico 87185
and Livermore, California 94550 for the United States Department
of Energy under Contract AT(29-1)-789

Printed March 1978

***When printing a copy of any digitized SAND
Report, you are required to update the
markings to current standards.***



Sandia Laboratories



Issued by Sandia Laboratories, operated for the United States
Department of Energy by Sandia Corporation.

NOTICE

This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the United States Department of Energy, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights.

Printed in the United States of America

Available from
National Technical Information Service
U. S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

Price: Printed Copy \$4.50 ; Microfiche \$3.00

SAND78-0329
Unlimited Release
Printed March 1978

OPERATIONAL INTERFACE CONTROL
DRAWING PROCEDURE


for

STE-LSE, SHENANDOAH

10 February 1978

OPERATIONAL INTERFACE CONTROL DRAWING PROGRAM PROCEDURE:
STE-LSE, SHENANDOAH

1. This document contains instructions for preparing and maintaining interface controls to be used on the Solar Total Energy-Large Scale Experiment, Shenandoah (STE-LSE, Shenandoah). It includes indexes of drawings to be prepared, procedures for working groups, schedules for required data, and drawing preparation requirements.
2. This publication supersedes all previous procedural agreements.



R. W. Hunke
Technical Program Manager
Sandia Laboratories

LIST OF EFFECTIVE PAGES

Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect
i-ii	Original				
iii-vi	Original				
I-1 thru I-6	Original				
II-1 thru II-4	Original				
III-1 thru III-2	Original				
IV-1 thru IV-2	Original				
V-1 thru V-4	Original				
A-1, 2	Original				
B-1, 2	Original				

CONTENTS

	<u>Page</u>
CHAPTER I INTRODUCTION	
1-1	Scope I-1
1-2	Definitions I-1
1-2-1	Interface Control Drawing I-1
1-2-2	Requirements. I-1
1-2-3	Abbreviations, Acronyms and Phrases I-2
1-3	Drawing Use and Control I-3
1-4	Referenced Documents and Lists of Drawings I-5
1-5	Types of Interfaces I-6
1-6	Manual Maintenance I-7
CHAPTER II INTERFACE CONTROL WORKING GROUP	
2-1	Membership II-1
2-2	Duties and Responsibilities II-1
2-3	Meetings II-1
2-4	Duties and Responsibilities of the ICWG Chairman II-2
CHAPTER III ICD CONTROL	
3-1	Drawing Establishment III-1
3-2	Drawing Approval III-1
3-3	Drawing Status and Change Control III-1
3-4	Drawing Revision Requirements III-1
3-5	Addition or Deletion of Drawings III-2
CHAPTER IV ICD PREPARATION REQUIREMENTS	
4-1	General Requirements IV-1
4-2	Drawing Title IV-1
4-3	Dimensions and Tolerances IV-1
CHAPTER V FORM INSTRUCTIONS	
5-1	Interface Control Action List V-1
5-1-1	Description V-1

CONTENTS (cont)

	<u>Page</u>
5-1-2 Preparation	V-1
5-1-3 Explanation of ICAL Entries	V-1
5-1-4 ICAL Changes	V-3
5-2 TWX or FAX Interface Control Action List	V-3

APPENDIX A DISTRIBUTION LIST FOR ICDS AND ICALS,
APPENDIX B DISTRIBUTION LIST FOR DOCUMENT

FIGURES

Figure		Page
1-1	ICD Development and Control	I-4
2-1	ICAL Status Format	II-3
5-1	ICAL Form	V-2

TABLES

Table		Page
1-1	Joint Operating Agreement Documents	I-5
1-2	Reference Documents	I-5
1-3	STE-LSE, Shenandoah ICDS	I-5
	APPENDIX A -- Distribution List for ICDS and ICALS.	A-1
	APPENDIX B -- Distribution List for Document	B-1

CHAPTER I

INTRODUCTION

1-1 SCOPE

This document defines the procedures for identifying, coordinating, controlling, evaluating, distributing, and maintaining status control of interface design constraints that apply to the STELSE, Shenandoah. Specifically, procedures are defined to address the GPC/DOE interface control drawings which reflect agreements by their designated agencies. Interface design considerations as described in this document are co-functioning, interdependent, or interacting design parameters at the interfaces between participants. This procedure may also apply to interface control drawings for selected interfaces where a single participant controls the design of both sides of the interface (end items hardware).

1-2 DEFINITIONS

Interface control drawings and the requirements for the data that they must contain are defined in the following paragraphs. Also defined are common abbreviations, acronyms and phrases contained in this document.

1-2-1 **INTERFACE CONTROL DRAWING.** An interface control drawing (ICD) depicts physical and functional interface engineering requirements of an item which affect the design or operation of co-functioning items. These drawings are used as design control documents, delineating interface engineering data coordinated for the purpose of: (a) establishing and maintaining compatibility between co-functioning items; (b) controlling interface designs, and thereby preventing changes to items requirements which would affect compatibility with co-functioning subsystems; (c) communicating design decisions and changes to participating activities.

1-2-2 **REQUIREMENTS.** An interface control drawing shall delineate, as necessary: (a) configuration and all interface dimensional data applicable to the envelope, mounting, and mating of the items; (b) complete interface engineering requirements, such as mechanical, electrical electronic, hydraulic, pneumatic, optical, etc., which affect the physical or functional characteristics of co-functioning items; and (c) any other characteristics which cannot be changed without affecting system design criteria. Interface drawings may be categorized as mechanical, electrical, thermal, architectural, interconnections, configuration and installation, operational sequence requirements, system switching, etc., as necessary. The notation INTERFACE CONTROL DRAWING shall be shown adjacent to the title block.

1-2-3 ABBREVIATIONS, ACRONYMS, AND PHRASES

AUTHENTICATION

Generally refers to GPC signature and subsequent GPC control of documents (drawings). For ICD's, this occurs at signature approval by the GPC and a designated agency of the DOE.

CA (Cooperative Agreement)

A joint operating agreement document between GPC and DOE (contract number EG-77-A-04-3994).

CDDR (Coordinated Design Data Required)

See Section 1.3

Identifies missing interface data with a note on the ICD identifying what, by whom, and when it will be supplied.

CI (Comment Issues) See Section 3.3

An ICD which is not subject to formal change controls, i.e., has not been approved by GPC/GE/SLA.

DOE (United States Department of Energy)

The federal agency under which the federally sponsored solar energy programs are promulgated and funded.

GE (General Electric, Valley Forge)

The organization, selected by DOE, to design and build the STE-LSE, Shenandoah. SLA (Sandia Laboratories, Albuquerque)

The Technical Program Manager, designated by DOE, for the STE-LSE project.

GSTEP (Georgia Solar Total Energy Project)

A group organized for the purpose of participating and assisting in the conduct and evaluation of STE-LSE, Shenandoah, in concert with the DOE.

GPC (Georgia Power Company)

The principal organization of GSTEP which is responsible for and coordinates all required activities of the GSTEP relative to STE-LSE, Shenandoah.

GIT (Georgia Institute of Technology or Georgia Tech)

A member charged with providing Solar expertise to the GSTEP.

H&H (Heery and Heery, Architects and Engineers)

The architectural and engineering support organization of GSTEP. H&H is the ICWG member for GSTEP and in addition has the chairmanship responsibilities for the ICWG.

SDI (Shenandoah Development, Inc.)

The land development organization who has provided the site for the STE-LSE.

ICAL (Interface Control Action List) See Chapter V

This is used either as an official ICD change request or to document problems and thereby provide a record of the course of corrective action. Normally, the change(s) is (are) coordinated prior to issuance of the ICAL. If the changes are extensive or complex, a precoordination ICAL may be issued to clarify the proposed action being requested.

ICD (Interface Control Drawing) See Section 1-2-1

ICWG (Interface Control Working Group) See Section 2-12

An officially constituted group which has the responsibility and duty to develop and control the ICD's for the STE-LSE Program.

STE-LSE, Shenandoah (Solar Total Energy - Large Scale Experiment, Shenandoah, Georgia)

An experimental total energy system operating by conversion of solar energy applied to a knitwear factory in Shenandoah, Georgia.

1-3 DRAWING USE AND CONTROL

The interface control drawings addressed herein are between GPC, GE, and SLA involved in the establishment of the STE-LSE, Shenandoah. ICDs will be initiated and released whenever two or more participants have established their first design agreement. The goal for a complete ICD is based on the earliest need of any participant involved.

Figure 1-1 depicts the progression of the ICD from the generation and publication of comment issues through sign-off and change control by GPC, GE, and SLA, and final authentication under GPC/DOE change control. Before GPC, GE, and SLA approval, drawing changes will be effected by meetings and/or correspondence resulting from the review of ICD comment issues. The status of incomplete areas will be indicated as Coordinated Design Data Required (CDDR) items. CDDRs identify missing interface data and control the submission of the data by means of a note (CDDR) in the drawing field near the void areas indicating the data required, and when and by whom such shall be supplied.

Also noted on Figure 1-1, for reference purposes, is the existence of a CA (Cooperative Agreement) drawing. The CA is an interface envelope (definition) and is a contractually binding document between the GPC and DOE. The ICDs being developed or signed shall not be in conflict with the CA. The CA will be in effect until it is superseded by the authenticated ICDs.

GPC is designated as the coordinating and preparation agency for all ICDs listed in this document. As such, GPC is responsible for the assignment of ICAL numbers and distribution of ICAL forms. Further discussion of ICALs and formal drawing change control are contained in Chapters 3 and 5.

1-4 REFERENCED DOCUMENTS AND LISTS OF DRAWINGS

Tables 1-1 and 1-2 list reference documents. Table 1-3 is a list of ICDs. Distribution for the drawings listed in Table 1-3 and attendant ICALs are presented in Appendix A.

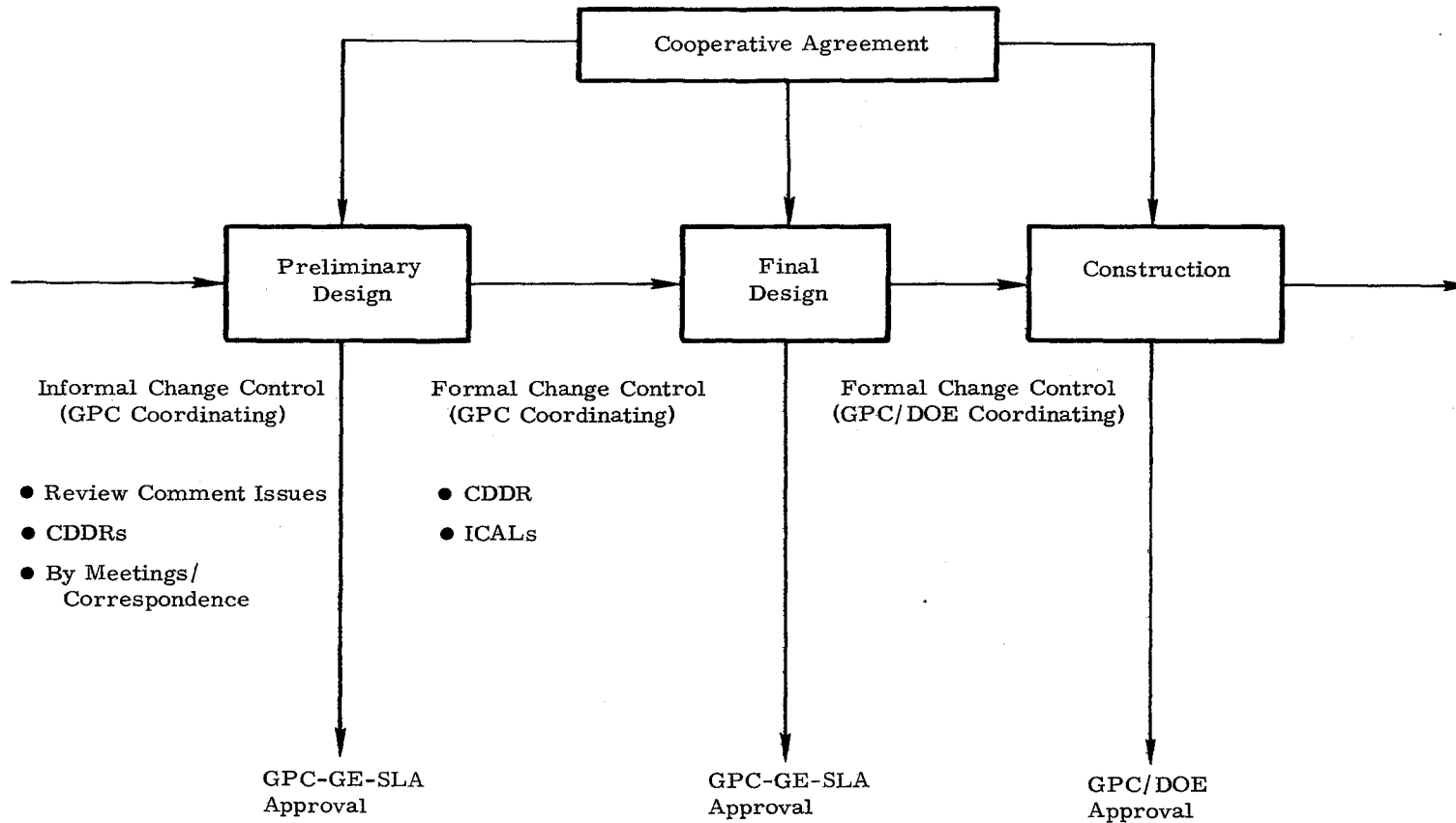


Figure 1-1. ICD Development and Control

TABLE 1-1. JOINT OPERATING AGREEMENT DOCUMENTS

The following document complements this document to the extent indicated therein.

1. Cooperative Agreement No. EG-77-A-04-3994

TABLE 1-2. REFERENCE DOCUMENTS

Document No.	Title
ASHRAE	Standards for Heating, Ventilation, and Air Conditioning
ANSI Y14.5 1973	Dimensioning and Tolerancing for Engineering Drawings

TABLE 1-3. STE-LSE, SHENANDOAH, ICDs

Drawing No.	Title	Responsible Agencies
S-1	Existing Site Plan	GPC (SDI, H&H)
S-2	STE-LSE Site Plan	GPC (SDI, H&H), GE, SLA
S-3	Alternate STE-LSE Site Plan	GPC (SDI, H&H), GE, SLA
S-4	Horizon Line and Sun Position	GPC (GIT, H&H), GE
A-1	Building Plan	GPC (SDI, H&H)
A-2	Building Elevations	GPC (SDI, H&H)
A-3	Typical Wall Section	GPC (SDI, H&H)
A-4	Building Plan with Future Addition	GPC (SDI, H&H)
MS-1	Meteorology Station	GPC (GIT), SLA
M-1	Heating/Cooling System Piping Layout	GPC (SDI, H&H)
M-2	Heating/Cooling System Details	GPC (SDI, H&H)
M-3	Process Piping and Equipment	GPC (SDI, H&H)
M-3a	Process Piping and Equipment, Details	GPC (SDI, H&H)
M-4	Interconnection Piping and Description	GPC (SDI, H&H), GE
M-5	Plumbing	GPC (SDI, H&H)
M-6	Mechanical Room	GPC (SDI)
M-7	Mechanical Room Isometric	GPC (SDI)
L-1	Load Requirements and Analysis (Separate Cover)	GPC (SDI, H&H)
T-1	Domestic Hot Water and Process Steam Requirements	GPC (SDI, H&H)
T-2	Building Load Profiles	GPC (SDI, H&H)
E-1	Electrical Load Profile	GPC (SDI, H&H)
E-2	Electrical Load Distribution	GPC (SDI, H&H)
E-3	Electrical Load Interconnection and Power Quality	GPC, GE
I-1	Data Gathering System	GPC
I-2	Electric Meter Locations and Description	GPC
I-3	Mechanical Instrumentation	GPC
I-4	Mechanical Instrumentation	GPC

1-5 TYPES OF INTERFACES

The following is a list of the types of interfaces that could be coordinated and agreed to by the ICWG. The list is not all inclusive.

1. Plant to STES System Interfaces
 - a. Mechanical (Routing, Geometry)
 - b. Electrical (All electrical parameters and functions)
2. Utility to STES Interfaces
 - a. Mechanical (Routing, Geometry)
 - b. Electrical (All electrical parameters and functions)
3. Site to STES
4. Meteorology Station
5. Building Plans
 - a. Knitwear Factory
 - b. STES Operations Center
6. Materials at Interfaces
 - a. Specification, comprehensive for materials
 - b. Surface coating and surface preparation
7. Standard Hardware Items (Nuts, Bolts, Connectors, etc.)
 - a. Limited-life components
8. Assembly and Alignment
9. Soft Points or Easily Damaged Areas
10. Cosmetic Criteria
11. General
 - a. Dimensions and tolerances
 - b. Limiting envelopes
 - c. Fit, form, and functional clearances
12. Electrical/Functional
 - a. Power and Quality
 - b. Signal input (electrical parameters)
 - c. Signal outputs (electrical parameters)
 - d. Source and load definitions
 - e. Sequence
 - f. Timing
 - g. Duration with timing
 - h. Variability of parameters
 - i. Grounding, bonding, and shielding requirements
 - j. Connector and pin assignments
 - k. Block diagrams
 - l. Limits and tolerances on environmental stimulus devices
 - m. Functional models

13. Material Control (Galvanic Action, Vulnerability, etc.)
 - a. Material specification
 - b. Environmental data (selected)
14. Sealing and Leakage Requirements
 - a. Interfacing valves
 - b. Leakage rate

1-6 MANUAL MAINTENANCE

This document will be changed or revised by letter or reissued, as appropriate, when directed by DOE. Request for changes or revisions shall be through the ICWG members to the preparation agency.

CHAPTER II
INTERFACE CONTROL WORKING GROUP

2-1 MEMBERSHIP

GPC, GE, and SLA shall appoint members and an alternate to the ICWG. ICWG members may bring technical specialists to meetings as required.

2-2 DUTIES AND RESPONSIBILITIES

The principal duties and responsibilities of ICWG members are listed below. These duties and responsibilities apply to all ICDs in which an agency participates. Individual working groups can be identified with each ICD noted in Table 1-3.

1. Prepare, negotiate, and obtain approval of interface information for placement on the ICD in accordance with program objectives.
2. Establish CDDR list and monitor compliance with target or need dates for CDDR data.
3. Obtain approval of ICALs and initiate ICALs. Notify ICWG chairman of ICAL number and schedule issue date, as soon as need is established.
4. Initiate the preparation of internal compliance procedures for maintaining conformance to the ICD.
5. Participate in ICWG activities required to define additional interface responsibilities and initiate necessary revisions to existing drawings and documents.
6. Assure that those interfaces controlled on other ICDs by reference are considered during review of ICALs against those ICDs.

2-3 MEETINGS

ICWG meetings will be held as required. The coordination and preparation agency shall act as chairman for the ICWG meetings.

The ICWG Chairman will be notified of all subgroup meetings and individual ICD working groups.

of making changes to an approved ICD. An ICAL is considered part of the ICD upon signature approval by the appropriate project officers from GPC/GE/SLA, TWX or FAX approval of an ICAL by a project officer is equal to his signature. An ICD shall be revised when five approved ICALs are outstanding or when 120 days have passed since the last revision, and less than 5 ICALs are outstanding.

3-5 ADDITION OR DELETION OF DRAWINGS

Requests for all new ICDs and for drawing number assignment shall be directed to the coordinating agency through the ICWG representative of the requesting agency. Deletion of drawing is accomplished in the same manner. GPC/DOE approval is required for the addition and deletion of drawings.

	ICAL NUMBER
	ICD NUMBER
	SUBJECT
	ENGINEERING
	PRE-COORD ICAL REC'D/SENT
	ICAL REC'D/SENT (ISSUED)
	GPC
	GE
	SLA
	ICWG CHAIRMAN
	ICWG NOTIFICATION OF DISPOSITION, GPC/D#
	COMMENTS/ ICD REVISION

ICAL STATUS

Figure 2-1. ICAL Status Format

CHAPTER III

ICD CONTROL

3-1 DRAWING ESTABLISHMENT

Inclusion of a drawing in the ICD index (Table 1-3) indicates ICWG approval for preparation of the drawing.

3-2 DRAWING APPROVAL

An ICD becomes a valid and binding technical design agreement after the signature approvals noted on Figure 1-1 are obtained. The first approval is between GPC, GE, and SLA. The second occurs at authentication and consists of signature approvals by the GPC representative and by a cognizant DOE agency.

3-3 DRAWING STATUS AND CHANGE CONTROL

As indicated by Figure 1-1, there are three distinct change control periods associated with the two distinct ICD approvals described above.

A drawing is not subject to formal change control until it has been approved by GPC/GE/SLA project officers, as appropriate. Before approval, drawings will be issued in the form of Comment Issues (CIs) which will be numbered consecutively as CI1, CI2, CI3, etc. CIs will contain all the information available at the time of issuance.

Before authentication but after approval by the GPC, GE, and SLA, drawing change control will be as specified by the requirements of Section 3-4. After authentication, the ICDs are under the control of GPC and the revision requirements of Section 3-4 apply in total. The status of each approved drawing shall be maintained in terms of the latest revision letter and all approved ICALs.

Incomplete or missing drawing details shall be assigned a CDDR number. The appropriate CDDR will define the action steps and schedules for completion, including the final need date. A drawing that has incomplete or missing information shall have a note referring to the CDDR number involved on the drawing. This note shall not be removed until all CDDRs on the list have been completed and added to the drawing. All CDDRs shall be completed before authentication.

3-4 DRAWING REVISION REQUIREMENTS

The need for a change to a drawing may be identified by any ICWG member. The member requesting a change shall initiate the ICAL (see Chapter 5), which is the only acceptable method

2-4 DUTIES AND RESPONSIBILITIES OF THE ICWG CHAIRMAN

The principal duties and responsibilities of the ICWG chairman are as follows

(See Figure 1-1):

1. Prepare, maintain, reproduce, and distribute documents in accordance with this document.
2. Maintain ICAL status (figure 2-1), establish scheduled completion dates, and distribute status per Appendix A, once a month. See Chapter 5 for description of ICALs.
3. Coordinate the review, final approval, and release of ICDs.
4. Maintain a historical file of all comment issues (CI) of each drawing, copies of all released drawing changes, and copies of all ICALs both approved and rejected.
5. Prepare and distribute a CDDR status list.
6. Notify all members of the impending meeting and to designate an alternate chairman if he will not attend.
7. Notify all members upon completion of all approvals for each ICAL.

CHAPTER IV
ICD PREPARATION REQUIREMENTS

4-1 GENERAL REQUIREMENTS

Drawings and supporting documents must show the controlling requirements to which the interfacing applies. Dimensions, notes, and views define requirements for an agency's interface to the extent that a change to one agency's components will affect the function or interchangeability of another agency's components.

Those areas of a drawing that are defined should show both sides of the interface for normal signature routing. When considered appropriate, only one side of the interface may be shown on a drawing. In those cases where only one side of the interface is shown and where two agencies participate in the drawing, the agency whose interface is not shown must co-function properly with the agency whose interface is defined.

Multisheet drawings may be continuously zoned or may be sheet zoned and sheet identified. Functional interface drawings may be supplied on multipage 8-1/2 by 11-inch forms.

ICDs (See Table 1-3) may refer to other ICDs for definition of interfaces common to both drawings.

4-2 DRAWING TITLE

The body of the title will be a concise description of the components involved followed by the word "Functional" or "Physical." The last words of the title are "Interface Control Drawing."

4-3 DIMENSIONS AND TOLERANCES

Dimensions and tolerances shall be in accordance with existing practice. The halves of the interface shall be separated and depicted in detailed views that show the applicable dimensions and the largest possible tolerances. To ensure interchangeability and function, the worst-on-worst approach shall be used. Statistical approaches will only be used when it is not economically feasible to use the worst-on-worst approach. In these cases, the drawing must contain the following note:

NOTE

THE WORST-ON-WORST TOLERANCE FOR THIS ATTRIBUTE IS X. HOWEVER, THE PROBABILITY OF EXCEEDING Y IS ONE IN Z, 000.

A documented analysis for showing how the worst-on-worst or the statistical values were arrived at will be retained by the ICWG chairman throughout the program.

Dimensions must be complete to the extent that all interface functions and relationships can be defined. Maximum and/or minimum dimensions are preferred for noncritical feature location; and limit dimensions are preferred for feature size. Tolerances on general dimensions shall be either as specified in the title block or on the face of the drawing. Geometric tolerances on general dimensions shall be as specified in the title block or on the face of the drawing. Symbols are recommended for critical features and notes will be used to complement the symbolic coverage. Those critical dimensions subject to change in size or shape due to temperature variations must be noted; e.g., dimensions at 68^oF (20^o C). Those dimensions that apply in the free state must also be properly noted. The note shall be as follows:

NOTE

THIS DRAWING IS FOR ENGINEERING INTERFACE REQUIREMENTS ONLY AND IS NOT TO BE USED FOR FABRICATION OR VERIFICATION OF PARTS.

Each drawing will indicate the responsible agency below each detail of an interface half.

Dimensions shall not be given from envelope to envelope. Dimensions shall originate from hard datum features wherever possible, floating datums will not be used. All dimensions will be related to datum reference frames (three-plane concept) wherever possible for components and assemblies.

CHAPTER V
FORM INSTRUCTIONS

5-1 INTERFACE CONTROL ACTION LIST

The use and preparation of the ICAL are discussed in the following paragraphs. ICALs will be used during formal drawing change control, before and after authentication (see Figure 1-1).

5-1-1 DESCRIPTION. The ICAL is used either as an official ICD change request or to document hardware problems and provide a record of the hardware course of corrective action and scheduled completion. A single ICAL will only address one problem or area of change. An urgent ICAL not requiring a pictorial representation may be made a TWX or FAX ICAL.

5-1-2 PREPARATION. A sample ICAL form is shown in Figure 5-1. Any block item may be contained on continuation sheets. Continuation sheets shall be plain white paper and shall contain the ICAL number, sheet number, and item number identification.

Blank ICAL forms will be issued by GPC and may be requested from the GPC ICWG representative. ICALs will be scheduled and maintained by the ICWG chairman. Copies of a proposed ICAL, signed by the originating project officer, will be mailed directly to all agencies, in accordance with Appendix A, by the originating ICWG member. After approval (TWX or FAX or telecon to the originator) by the agencies affected, the original ICAL form will be routed to all agencies participating in the affected drawing for signature approval.

5-1-3 EXPLANATION OF ICAL ENTRIES.

1. Date ICAL is originated
2. ICAL Number--A block of numbers will be given to each participant by the ICWG chairman (e.g., Participant A: ICAL No. 0-299, Participant B: ICAL No. 300-599....). Each participant will issue ICALs in sequence.
3. Prerelease Engineering Order Number--Free block.
4. Originating Agency--Originator's company, agency, or commission.
5. Drawing/Doc. No.--List the affected drawing or document number.
6. Title--The affected drawing or document is listed.
7. Change Request Priority--Indicate whether the change is urgent or routine. Urgent requires a response time less than 30 days.
8. Affected Agencies--List other agencies affected by this change.
9. Problem Description--The first statement should be a short title or description of the change requested or of the problem needing resolution, followed by a complete, concise, and accurate description of the requested change or statement of the problem.

Georgia Power Company 270 Peachtree St NW Atlanta Georgia 30302		Date: ①
		Pre Release E.O. Number: ③
		Originating Agency: ④
INTERFACE CONTROL ACTION LIST - NO. ②		
Drawing Document No. ⑤	Title ⑥	Change Request Priority ⑦ <input type="checkbox"/> Urgent <input type="checkbox"/> Routine
Affected Agencies: ⑧		
Problem Description: ⑨		
Action Required: ⑩	Schedule Constraints:	
		⑪a
		Problem Need Date: ⑪b
References/Remarks: ⑫	APPROVALS	
	ORIGINATOR	
	GPC	
	GE	⑬
	SLA	
	CHAIRMAN	

Figure 5-1. ICAL Form

10. Action Required--List events (actions and recommendations) and assignments required to assess and resolve the interface problem.
11. Schedule Constraints and Problem Need Date:
 - a. List the dates that the above events should be accomplished, when appropriate.
 - b. List the date required to close the ICAL in accordance with program needs. Timed responses are based on the priority given the ICAL and the schedule dates specified therein. If, for any reason, the need date cannot be met, the responder will provide the originator before the need date with the reason for the delay and the estimated date on which the response will be sent.
12. References/Remarks--Reference data, TWXs, telecons, or pertinent remarks concerning the problem or request.
13. Signature Block--Block to be added by the originator. Originator to obtain necessary signatures (para 5-1-2) on the original form and forward it to the ICWG chairman.

5-1-4 ICAL CHANGES. An ICAL may be revised with a change letter (e.g., ICAL 100A, 100B, etc.) until the item has been resolved.

5-2 TWX or FAX INTERFACE CONTROL ACTION LIST

An expedient method of processing an urgent change is by TWX or FAX ICAL. The information required is similar to the data necessary for completing a standard ICAL form. The following information is required on a TWX or FAX ICAL:

1. Date time group (identification)
2. Originating agency
3. Passing instructions
4. Agencies receiving passing instructions
5. Purpose of ICAL
6. Reference to this procedure and to the ICAL number.

The following data shall be listed including the item letter:

1. Drawing title
2. Drawing number
3. Drawing sheets and zones affected (by number)
4. Change reason (supplementary data may be included after the reason)
5. Description of change (is, was, etc.)
6. Originator
7. Requested response date

After completion of approval of a TWX or FAX ICAL, a standard ICAL original (in accordance with para 5-1) will be routed for signatures and forwarded to the ICWG chairman.

APPENDIX B

Distribution List for Document

DOE/HQ (Attn: M. Resner)	1
DOE/ALO (Attn: G. Rhodes)	1
SLA (Attn: G. Kinoshita, 5711)	1
GE (Attn: R. McCarthy)	2
SDI (Attn: D. Franz)	1
GIT (Attn: J. R. Williams)	2
GPC (Attn: E. Ney)	3
H&H (Attn: B. Cruickshank)	2

DISTRIBUTION:

5711 G. S. Kinoshita (20)

8266 E. A. Aas

3141 C. A. Pepmueller (Actg) (5)

3151 W. L. Garner (3)

For DOE/TIC (Unlimited Release)

DOE/TIC (25)

(R. P. Campbell, 3172-3)