APPENDIX XII

120. SPECIFICATION AND SUPPORT DOCUMENTATION MAINTENANCE, COMPUTER SOFTWARE

120.1 Purpose. This appendix provides amplified instructions for the preparation of Configuration control forms and documents that are used for reporting proposed and approved changes as well as current status and version(s) of CSCIs and their associated documentation. Also, requirements are included that pertain to the preparation timing of the various configuration control forms as they relate to Class I and Class II changes. Adherence to the requirements contained in this appendix will ensure that accurate records are developed, maintained, and disseminated for all CSCIs and for the status of all approved changes and change proposals throughout the acquisition phase. Change maintenance procedures are initiated for each specification, support document, or CSCI at the time of formal approval or acceptance of the specification or document by the procuring activity.

120.2 Scope. This appendix is divided into three sections. Paragraph 120.4 and associated subparagraphs contain general configuration control processing requirements pertaining to Class I and Class II CSCI changes. Subparagraphs of 120.5 contain instructions (or references to other sources that contain instructions) for the preparation of required configuration control documents. Finally, paragraph 120.6 contains information pertinent to specification and document revisions.

120.3 Applicability. This appendix is applicable for use during the acquisition and operational phases of computer software configuration item design, development, test and updating. Each contractor shall be responsible for compliance by subcontractors in accordance with paragraph 1.3 of this standard.

120.4 Configuration control change process. All changes to established functional, allocated, design or product baselines are Class I changes. Slight changes to documentation or other changes of a minor nature are Class II changes.

120.4.1 Class I change processing. Initial Class I change processing shall be performed in one or two steps. One step change processing is the simultaneous submission of the formal ECP and SCN with change pages for the appropriate specification(s) and document(s) by the contractor to the procuring activity Configuration Control Board (CCB). Two step change processing consists of the following steps:

    a.   Submission of an ECP by the contractor to the procuring activity CCB without SCN or change pages.

b.   Submission of the ECP (as approved and possibly revised by the CCB), completed SCN and change pages to the appropriate specification(s) to the CCB.

120.4.1.1 Use of one step change processing. One step change processing shall apply to changes in the System/Segment Specification when an approved change to the Software Requirements Specification or Interface Requirements processing shall also be used for changes to the Software Requirements Specification or Interface Requirements Specification when the changes are of a minor nature to accomplish expansions or refinements, such as the elimination of "TBDs".

120.4.1.2 Use of two step change processing. Two step change processing shall be used for proposed major changes to the Software Requirements Specification and Interface Requirements Specification, such as the addition or deletion of significant capabilities, which may entail extensive system engineering analysis and result in changes to many pages of the specification. Two step change processing shall always apply to the Software Product Specification because the Software Product Specification defines the CSCI product as built, and therefore cannot be modified until the proposed ECP is approved (i.e., accomplishment of step one of the two step process precedes CSCI modification which in turn, precedes step two).

120.4.1.3 Post CCB approval-action. Upon approval of the ECP and the SCN(s) by the procuring activity CCB, for two step change processing the contractor shall complete the change process for the current modification by preparing the following items for distribution:

a.   Specification change notice and specification change pages, for each affected specification.

b.   Revised Computer Software Configuration Item.

c.   Version Description Document related to the revised CSCI.

120.4.2 Class II change processing. Class II changes shall not require approval by the procuring activity CCB prior to implementation by the contractor.

120.4.2.1 Class II change report applicability. A Class II change report (CR) addresses either Software Requirements of an Interface Requirements Specification, or a Software Product Specification but never both the requirements and product specifications simultaneously. A class II CR is applicable to any delivered, maintainable document.

120.4.2.2   Reporting Class II changes.   Class II changes shall be reported to the procuring activity by including a Class II CR as part of the next Class I ECP package for the same CSCI.   Class II changes shall be included in SCNs issued to incorporate Class I changes.   The SCN shall indicate the classification of each change specified therein.

120.4.2.3   Other Class II change processing requirements.   All Class II changes installed in a CSCI shall be identified in the next issue of the Version Description Document by CR number, title, and issue date.   Class II CRs shall also be reported in the computer software configuration index.

120.5   Configuration control documents and forms.   Instructions (or references to sources that contain instructions) for the preparation of the configuration control documents are contained in the following subparagraphs:

120.5.1   Engineering Change Proposal (ECP)

120.5.2   Specification Change Notice (SCN)

120.5.3   Version Description Document (VDD)

120.5.4   Computer Software Configuration Index

120.5.5   Change Status Report

The forms and documents listed above shall be used to maintain specifications and support documentation, as applicable to any specific proposed or approved change(s).   Requirements for applying the appropriate documents and forms for a specific change are delineated in the following subparagraphs..

120.5.1   Engineering Change Proposal (ECP).   The contractor shall provide an ECP to the procuring activity CCB for all proposed Class I changes to a CSCI.   Upon approval and implementation of the change, the contractor shall re-submit the approved ECP to the procuring activity CCB.   A single ECP can accommodate more than one change including changes to two or more CSCI(S) developed by several contractors and subcontractors.   Instructions for completing an ECP are provided in Appendix VIII.

120.5.2   Specification Change Notice (SCN).   The SCN shall be used to document all Class I and Class II changes to System/Segment, Software Requirements, Interface Requirements, and Software Product Specifications.

120.5.2.1   Distribution of SCN.   A proposed SCN shall be distributed to other activities on the specification distribution list only after the SCN has been approved by the procuring activity.

120.5.2.2   Supersession.   When a contractor is requested to resubmit a proposed SCN, the resubmitted SCN shall retain the same SCN number with a new date.   An SCN shall be revised and resubmitted only in conjunction with a revision to an ECP.   When an SCN is revised and resubmitted, the resubmitted SCN shall show that the previously dated SCN has been superseded.

120.5.2.3 Approved SCN. The approved SCN shall be inserted into the specification immediately in front of Section 1 following the title page.

120.5.2.4 Specification change page. The specification change page(s) shall be attached to the approved SCN and shall constitute an integral part of the SCN. Updated and reissued pages shall be complete reprints of pages suitable for incorporation by removal of old pages and insertion of new pages. All portions affected by the change shall be indicated by a symbol in the right hand margin.

120.5.2.5 Proposed specification change pages. Proposed specification change pages may be attached to a proposed SCN. A proposed specification change page shall reflect only the changes of that particular page (i.e., the paragraphs not being changed shall not be incorporated on the page).

120.5.2.6 Preparation of the SCN. A sample SCN is presented in Figure 13. If required by the procuring activity, the Specification Change Notice shall be prepared by the contractor in accordance with the Specification Change Notice Data Item Description.

120.5.3 Version description document. The Version Description Document shall be prepared to accompany the release of each version of a CSCI and to accompany each release of an interim change (i.e., changes that occur between CSCI versions). This document shall record the items delivered and additional pertinent data relating to status and usage of the CSCI change. If required by the pro ' curing activity, the contractor shall prepare the Version Description Document in accordance with the format and content of the Version Description Document Data Item Description.

120.5.4 Computer software configuration index. The computer software configuration index (henceforth referred to as "index") provides the current status of specifications and additional contractual deliverable documents which depend for their content on the CSCI configuration. Document status is maintained by dates of issue, document number and title, ECPs, SCNs, and ' revision identifiers associated with each issue or document change resulting from accomplished changes. Additionally, the index contains a section which provides a summary record of milestones for CSCI development, audit, and qualification. One index is maintained for each CSCI; however, status data pertaining to a group of interrelated CSCIs may be combined in a single index when so approved by the procuring activity.

120.5.4.1 Organization and content. The index contains numerous sections that may be in book form. The format is not mandatory, but the elements of information are. The index shall be prepared based on the guidelines in this appendix and will be generally in the format as described herein. The body of the index shall have one historical record section and an additional section for each type of document or document series associated with the CSCI. The

Specification Change Notice

Date Prepared

1. Originator Name and Address	2. ☐ Proposed	3. Code Ident (Design Activity)	4. Spec No.	
ᵒ	☐ Approved	5. Code Ident (SCN Prep Activity)	6. SCN No. 3	
7. System Designation (Type, Model, Series, etc.)	8. Related ECP/NCP No. 4–R1	9. Contract No.	10. Procuring Activity (Note 2) Authority	
11. Configuration Item Nomenclature		12. Effectivity (Serial numbers of all configuration items affected by this SCN)		

This notice informs recipients that the specification identified by the number (and revision letter) shown in block 4 has been changed. The pages changed by this SCN (being those furnished herewith) and carrying the same date as this SCN. The pages of the page numbers and dates listed below in the summary of changed pages, combined with nonlisted pages of the original issue of the revision shown in block 4, constitute the current version of this specification.

13. SCN No.	14. Pages Changed (Indicate Deletions)		S	A	15. Date
3	Pages changed and transmitted herewith 6 7 7a 12 Deleted		X X	X	

SCN
No.
1
2
3
4
5
6
	ECP
	No.
	2–R1
	3–R2
	6
	7–C1
	8
		Summary of previously changed
		pages
		1,2 2/09/86
		11 4/24/86
		Disapproved 4/10/86
		9,15,21 4/10/86
		4,8,12 4/15/86
		
		Note 1. Blocks 2, 4, 6, 8, 9, 11, 13,
		           and 16 are self–explanatory
		
		Note 2 Type of contractual action
		           required for implementation
		
		           of this SCN
			X
			X
			
			X
			X
					3/12/86
					5/08/86

16. Technical Concurrence (Procuring Activity)			Date (Approved Date)		

"S" Indicates Supersedes Earlier Page
"A" Indicates Added Page

Figure 13. Example of Entries on SCN (CSCI Specification)

Section A – Development Record

following is an example of a typical outline of a computer software configuration index for a CSCI:

Section I – Software Requirements/Interface Requirements Specification

Section II – Software Product Specification

Section III – Test Documentation

° Section IV – Handbooks

Section V – Manuals

Section VI – Version Description Document.

120.5.4.2 Preparation and maintenance. The initial issue of the index shall be prepared and delivered by the contractor after the establishment of the functional baseline as required by the procuring activity. Subsequent issues shall be published and distributed thereafter at regular intervals (i.e., monthly) as established by the procuring activity. The initial issue shall contain only Section A, which identifies significant schedule and completed milestone data pertaining to the CSCI, and Section I, which lists the basic issue of the Requirements Specification. In those instances of complex CSCIs for which a volume structure of the specification has been approved by the procuring activity, this listing shall identify each volume as a separate issue. An additional section (i.e. of the Sections II through VI as identified in 120.5.4.1) is added to the basic issue of any subsequent document if delivered by the contractor for approval or acceptance by the procuring activity. Each succeeding issue of the index is expanded and revised to reflect milestone data in Section A and to include the listings specified in 120.5.4.4 below. A section may be deleted from the index once a particular document or document series has outlived its usefulness. The first page(s) of the index shall be prepared to conform to figure 14 and in accordance with the following instructions:

a.   Issuing agency – Enter the name of the contractor responsible for the design/development of the CSCI.

b.   Contract No. Enter the number of the Government contract under which the CSCI development is accomplished.

c.   CDRL Item No. Enter the item number from the Contract Data Requirement List (CDRL) for the CSCI.

d.   Document No. Enter the contractor's document number for the configuration index.

e.   Date – Enter the publication date of the given index issue.

f.   CSCI nomenclature – Enter the approved nomenclature of the CSCI.

(Computer Software)				
Issuing Agency			Document No.	
Contract No.	CDRL Item No.		Date	
System		CSCI No.		Issue No.

TABLE OF CONTENTS

Figure 14. Computer Software Configuration Index

g. System – Enter the title and number of the system of which the CSCI is a part, as assigned by the procuring activity.

h. CSCI No. Enter the number of the CSCI.

i. Issue No. Enter the issue number of the index. The number "1" is assigned to the first issue; subsequent issues are numbered consecutively.

j. Table of contents – Provide a table of contents at the front of the index, following the data contained in the blocks described above. The table of contents shall identify the page number on which the initial entry appears for each section, for each separate document or volume under a section where applicable, and for each of the two parts of a section.

120.5.4.3 Preparation of development record. Section A – This section of the index shall be prepared in a format equivalent to that illustrated on figure 15, to include the information specified below.

a. CSCI No. and nomenclature – Enter the number and approved name of the CSCI as it appears on the front cover of CSCI specification (e.g., TM1112A, Message Interface Computer Page for SPACE, System 4XXL).

b. Specifications and documents – For each specification or document listed in the left hand column of figure 15, enter the date of basic issue and, for those items not indicated by an asterisk, enter the date of authentication.

c. Reviews and audits – For each milestone event indicated in the right hand column of figure 15, enter the starting and ending(s) of the (incremental) activity.

120.5.4.4 Organization of content, Sections I through VI. Each section of the index devoted to a specification or document series shall be further subdivided into two parts. Part 1 contains a listing of the basic issue(s) and all subsequent updatings of the specification or document, together with identification of ECPs incorporated and associated SCNs. Part 2 lists which ECPs have been approved and will affect the specification or document but which have not yet been reflected in a published specification or document revision or set of specification or document change pages.

Configuration Item Development Record – Section A	
CSCI No. and Nomenclature	
Specifications and Documents	**Reviews and Audits**
Software Requirements Specification Issued: Authenticated:	Software Specification Review
Interface Requirements Specification (s) Issued: Authenticated:	
Software Top Level Design Document* Issued:	Preliminary Design Review
Software Test Plan Issued: Approved:	
Software Detailed Design Document* Issued:	Critical Design Review
Software Test Description Issued: Approved:	
Interface Design Document* Issued:	
Data Base Design Document* Issued:	
Software Test Procedure Issued: Approved:	Test Readiness Review
Software Test Report Issued: Authenticated:	Functional Configuration Audit
Software Product Specification Approved:	Physical Configuration Audit
Contractor	Contract No.

*The authenticated versions of these documents are equivalent to the authenticated software products specification.

Figure 15. Configuration Item Development Record – Section A (CSCI)

120.5.4.4.1 Part I - Basic issues and incorporated change pages. Part I of each section shall contain information equivalent to that illustrated in figure 16. The figure illustrates data only for Section I of the index, and for a requirements specification which is issued as a series of separate volumes and appendices. Data shall be provided in Part I of each section as appropriate to single volume documents and the given section, as follows:

a.   Issue. The first entry in this column is always "BASIC" for all documents or volumes in section I through V. The first entry in Section VI is "VDD-1". Each succeeding entry will be:

(1)   for Sections I and II, and SCN number; or

(2)   for Section VI, a VDD number.

Except for VDDs in Section VI: "BASIC" is replaced by a suitable indicator when a complete revision is issued, e.g., "REV A". The previous listing of all previous updates to the basic issue or to any previous revisions is deleted from the index when a new revision appears.

b.   Change. For the first entry, this column shall be used to identify the number of the given document or volume. For each succeeding entry in the "ISSUE" column (i.e., SCN number, or VDD number), this column shall contain a listing of the numbers of all ECPs which are incorporated in the given updating. In addition to Class I ECPs, all sections shall identify the number of all Class II changes incorporated.

c.   Title. The title of the given document or volume is entered opposite the "BASIC" entry. The title of the change is listed opposite each ECP or Class II change report number appearing in the preceding column.

d.   Date of Issue. The date listed is the date of issue corresponding to each basic issue, SCN, change issue identifier, or VDD number appearing in the first column.

120.5.4.4.2 Part 2 - Approved changes. This part shall contain a listing of all approved ECPs which affect the specification or document listed within the given section but which have not yet been incorporated into published changes. Upon approval of a formal ECP, the next issue of the index shall contain an entry under Part 2 of each section in which the document, or any volume of the document, was identified in the ECP as being affected by the proposed change. When a change package is submitted, the procuring activity will verify that the impact of the CSCI change is adequately reflected in the revised document(s) and that document changes are accurately reported in the formal revised ECP which accompanies the issue of changes. Upon approval of

Computer Software Configuration Index			
Section I – Software Requirements Specification, ESD499L385 (9 Volumes + Appendixes)			

Part 1. Basic Documentation

Issue	Change	Title		Issued
Basic	Volume 1 General			01–31–85
SCN 1–1	ECP	1	F/Tell Over Multipoint Line	02–30–85
SCN 4–1	ECP	7	Delete Birdie–6	05–07–85
Basic	Volume 2 Surveillance			01–31–85
SCN 1–2	ECP	1	F/Tell Over Multipoint Line	02–30–85
SCN 3–2	ECP	4	Add Tracking–On–Station ARPS	04–06–85
SCN 9–2	ECP	11	System Limits for Manual Reports	12–05–85
Appendix IV	(Continued)			
SCN 38–IV	ECP	57	Modify Suppress Tape SRN Message	03–18–86
SCN 47–IV	ECP	63	Change Evaluation Request Format	06–12–87

Part 2. Approved Changes

ECP No.	Title	Vol/App	Approved
90	Expand Legal Range of Tape SRN	1,5,7,I,III	12–19–86
94–1	Monitor Exchange Tell Line	3,4	02–06–87
95	Compensate Grid vs. True North	1,2,3,II	06–24–87
101	Display Function Changes	3,8,9,I	06–24–87
105	Delete Automatic Mode Change	2	07–02–87

Figure 16 Configuration Index: Sample Section I – CSCI Requirements Specification

the revised ECP and submitted changes to each affected document or volume, the listing of the ECP under Part 2, which references that document/volume, shall be deleted in the next issue of the index. The listing for each ECP shall comply with the following instructions, as illustrated in figure 16, Part 2:

Column 1. ECP No. Enter the number of the ECP.

Column 2. Title/volume(s) appendices affected – enter (a) the title of the proposed change, and (b) if the document affected is issued in more than one volume or issued with separate appendices, identify each volume or appendix affected by the change.

Column 3. Data approved – Enter the approval date of the ECP.

120.5.5 Change status report. The change status report details the status of all proposed changes to a CSCI for which the contractor is responsible, and for which existing documentation is listed in the configuration index. The purpose of the report is to provide the procuring activity and contractor, on a periodic basis, with the current status of all officially proposed ECPs to the CSCI. The change status report supplements the configuration index. It shall be published concurrently with the index and shall be used with the index to obtain current status information on the CSCI and related changes thereto.

120.5.5.1 Preparation of the computer software change status report. The change status report shall be organized into a minimum of two sections as described herein.

120.5.5.1.1 Status listing. Section I shall contain a listing by number of each successive ECP prepared against the CSCI, with a brief indicator or comment which characterizes the status of the ECP. An example of this listing is illustrated in figure 17. When an ECP is impacted by or impacts another ECP, an appropriate note indicating the impacted or impacting ECP shall be included in the comments column.

120.5.5.1.2 Status summary. Section II of the report shall contain a detailed summary of the status information for each ECP listed in Section I which is currently active. The summary shall appear in the first issue of the change status report following assignment of a number to an ECP in preparation, and shall continue to appear in each subsequent issue of the report for at least one issue following either (a) disapproval of the ECP or (b) completion of implementation of the change. The contractor may use his own form for the status summary, provided it contains the following minimum items of information.

    a. The ECP number and date of preparation.

    b. The short title of the proposed ECP.

Change Status Report

Section 1. Status Listing

System			Date
CSCI Nomenclature		Spec No.	CSCI No.
ECP No.	Title	Status	Comments
2	Display Expansion Levels	A	SCN Approved
2-R1	Display Expansion Levels	A	
3	Data Link Buffer Output	A	New Information
3-R1	Data Link Buffer Output	A	SCN Approved
3-R2	Data Link Buffer Output	A	
4	Detection of Button Pop-up	A	
4-R1	Detection of Button Pop-up	S	
6	Process Simulated A-Link Data	D	Editorial Change
7	Detection of Input Data	A	
7-C1	Detection of Input Data	A	Pending Interface Requirements
7-R1	Detection of Input Data	P	
8	Data Monitor Feedback	X	

Status Indicators:
P - ECP is being prepared
S - ECP is submitted and under consideration by the CCB
A - ECP has been approved by the CCB
D - ECP has been disapproved by the CCB
X - ECP has been deferred by the CCB
I - ECP has been implemented

Section 2. Status Summary
(Contractor Format)

Figure 17. Change Status Report, Computer Software

c.   A brief summary of the problem which the proposed change is to resolve.

d.   A brief description of the proposed solution.

e.   References documents – letters, reports of design studies or tests, problem reports, etc.

f.   Preparation status – Whether the ECP is in process of coordination, is undergoing initial preparation, has been submitted, etc.

g.   Action status – Whether the ECP is awaiting CCB action, has been returned or withdrawn for revision/corrections, has been approved, requires further study, etc.

h.   Implementation status – the dates of distribution of the approved change in the CSCI specification and shupment of the new CSCI version.

120.6   Specification/document revision. A revision is defined as the reissue of a specification or contractual deliverable document with all the SCNs since the last reissue (or original issue) incorporated in the revised specification or document. A specification or contractual deliverable document shall not be revised without approval of the procuring activity. The specification or document revision shall not incorporate the information from any proposed SCNs that have not been approved.

120.6.1   Superseded specification/document. The superseded specification or document shall be retained intact with all change pages and SCNs to provide complete continuity of all previous changes.