

December 7, 1993

Docket No. 52-002

APPLICANT: ABB-Combustion Engineering, Inc. (ABB-CE)

PROJECT: CE System 80+

SUBJECT: PUBLIC MEETING OF OCTOBER 21, 1993, REGARDING THE SOFTWARE PROGRAM MANUAL, INSTRUMENTATION AND CONTROL ISSUES, FOR THE ABB-CE SYSTEM 80+ STANDARD PLANT DESIGN

On October 21, 1993, a public meeting was held at the ABB-CE offices in Windsor, Connecticut, between representatives of ABB-CE and the U.S. Nuclear Regulatory Commission (NRC). Enclosure 1 provides a list of attendees.

The purpose of the meeting was to discuss issues related to the NRC staff and contractor's review of the Instrumentation and Control (I&C) aspects of ABB-CE's Software Program Manual (SPM) for the System 80+ design. All I&C issues related to the SPM were resolved during the meeting. Enclosure 2 provides a summary of the NRC staff and contractor comments, ABB-CE's responses, proposed changes to the SPM, and the resolutions.

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As stated

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ABB-CE SYSTEM 80+
SOFTWARE PROGRAM MANUAL
I&C ISSUES MEETING ATTENDEES
OCTOBER 21, 1993

<u>Name</u>	<u>Organization</u>
M. Waterman	NRC
R. Fuld	ABB-CE
T. Rozek	ABB-CE
M. Novak	ABB-CE
M. Chiramal	NRC
K. Scarola	ABB-CE
R. Wyman	LLNL
S. Ritterbusch	ABB-CE
S. Magruder	NRC

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#	NRC/LLL Comment	CE Response	Proposed Change	Pages	Resolution
1	<p>1. Overall comments</p> <p>The SPM contains many of the elements that are necessary for a high quality software design and development program. However, the SPM does not contain all of the elements, nor does it contain them to a sufficient degree.</p>	<p>There is insufficient information in the comment for CE to understand what areas are insufficiently covered or missing in the SPM. The SPM addresses the appropriate IEEE standards. The SPM is written at a level appropriate for regulatory review, as well as practical use by software designers.</p>			<p>CE response is acceptable.</p>
2	<p>The independence of the software quality assurance (QA) personnel and the independence of the verification and validation (V&V) teams have not been adequately defined.</p>	<p>Section 2 states V&V teams are supervised by someone other than the supervisor responsible for the system. Section 2 will be clarified that V&V team members have not participated in the requirements or design development. Section 4.1.4 and 4.2.4.3 will also be revised to include this independence. Independent system design QA is addressed by the CE Design Quality Assurance Program, which addresses all aspects of design and engineering at CE, according to 10CFR 50 App. B. CE considers that these two review and audit capabilities are sufficient for reliable software and system design, and CE does not additionally employ a specific Software QA organization in its program.</p>	<p>Clarify V&V team member independence in sections 2 and 4.1.4 and 4.2.4.3</p>	<p>18-20, 48, 57</p>	<p>CE response and proposed change are acceptable provided section 2.0 is revised to state "Independent system design QA is performed by the CE Design Quality Assurance organization, which addresses all aspects of design and engineering at CE, according to 10CFR 50 App. B."</p>

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3	<p>The SPM is inconsistently organized. For example, although Section 3.0 Software Quality Assurance Plan, generally follows the outline defined in IEEE 730.1-1989, and section 3.2 Management, and subsection 3.2.2, Tasks and Responsibilities, address various tasks that will take place during the life cycle, section 3 does not directly address software quality assurance. While the tasks in section 3.2 and subsection 3.2.2 should be defined, they should not be addressed in the software quality assurance plan (SQAP). The SQAP should only discuss software quality assurance (SQA) activities that occur in each phase of the software life cycle.</p>	<p>Section 3 is consistent with the format and content in IEEE 730-1989 on Software Quality Assurance Plans. The content required by this standard includes a description of tasks required to develop software. These tasks are described in the SPM.</p>			<p>CE response is acceptable.</p>

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4	<p>The content of the SPM must be revised to include specific details regarding managerial and programmatic administration of the software development effort. For example, the SPM does not provide a detailed outline of the organization of the CEO with regard to the independence of the QA manager. If the QA manager is subordinate to the manager responsible for product delivery, the quality of the software may be impacted by contractual schedules.</p>	<p>The Quality Assurance Program defines the independence of the QA manager with respect to the design organization. See comment #2.</p>			<p>CE response is acceptable provided the following changes are made:</p> <ol style="list-style-type: none"> 1. Approvals by "CE" and "CEO", as on pp. 114-115, are changed to "design team engineer" and "design team group supervisor," respectively. Change elsewhere in the document where appropriate. 2. Retitle section 4.2.3.6 to Design team group supervisor, and section 4.2.4.3 to verification team group supervisor. 3. Change "Design group supervisor" on organization chart on p. 20 to "Group supervisor."

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5	<p>The SPM must be revised to eliminate inconsistencies in the document format. For example, subdivisions are inconsistently delineated with bullets, numbers or letters. These instances of inconsistent format detract from the overall credibility of the SPM.</p>	<p>The use of bullets, numbers, and letters is largely consistent throughout. Bullets are generally used to separate items of a list that are not currently or expected to be individually referenced from elsewhere in the document. Numbers and letters are used for lists where order is important or references to individual items are anticipated. To minimize ambiguity, two different lists within a single outline section are usually distinguished by numbers in one and letters in the other. CE has identified minor exceptions to these rules that we propose to correct.</p>	<p>Modify document to be consistent with rules in CE response.</p>	<p>7, 8, 22, 28, 52, 58- 59, 61- 67, 69- 70, 76- 77, 79, 81-98, 119-120</p>	<p>CE response and proposed change are acceptable.</p>
6	<p>The Software Safety Plan (SSP) description contains many of the necessary words, but this area is new and many software development organizations are struggling with the concept of software safety. Ideally, the SSP details the tasks and activities of system safety management and system safety engineering required to identify, evaluate and eliminate or control hazards throughout the system life cycle. The purpose of the plan is to provide a basis for ensuring that adequate consideration is given to safety during all life cycle phases of the program and to establish a formal, disciplined program to achieve system safety objectives.</p>	<p>The Software Safety Plan description follows the corresponding draft IEEE standard (4/92), as requested and provided by the NRC.</p>			<p>CE response is acceptable.</p>

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7	<p>The SPM does not describe the production of traceability matrices (TMs). A TM allows the tracing of requirements between design documentation and software modules. Traceability is discussed as an attribute, but there is no method specified in the SPM for demonstrating its implementation. Additionally, "traceability" is also referenced in the SPM as the process of tracing versions of documents.</p>	<p>CE agrees. The SPM will include a description of traceability matrices and will describe its use for succession of life cycle phases as well as revisions.</p>	<p>Section 4.1.8 will be added to describe the use of the traceability matrix. A new exhibit will be added to the end of section 4 to illustrate the use of the matrix.</p>	<p>49a, 105e</p>	<p>CE response and proposed change are acceptable, provided the following is added to the description of the traceability matrix in section 4.1.8: "A data base format is acceptable provided its contents include the information and relationships described in this section."</p>

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#	NRC/LLL Comment	CE Response	Proposed Change	Pages	Resolution
8	<p>2. General Comments</p> <p>Section 1.2.1. This section should provide a clear distinction between active protection software and software that is important to safety but is not safety-related.</p>	<p>CE agrees. Active Protection is software whose function is necessary to directly perform RPS, ESFAS and safe shutdown control action. Important to Safety is software that is relied on to monitor or test protection functions or is solely relied on to monitor plant critical safety functions and the performance of emergency success paths. Important to Availability is software that is relied on to maintain operation of plant systems and equipment that are critical to maintaining an operating plant. General Purpose is software that performs some purpose other than that described in the previous classifications. This software includes tools that are used to develop software in the other classifications, but is not installed in the on-line plant system.</p>	<p>A definition of each of the software classifications will be added.</p>	<p>7-8</p>	<p>CE response and proposed change are acceptable, provided the following changes are made:</p> <ol style="list-style-type: none"> 1. Change ITS definition as follows: "Important to safety is software whose function is necessary to directly perform alternate protection system control actions, or software that is relied on to monitor or test protection functions, or software that monitors plant critical safety functions, as shown in exhibit 3-1." 2. Modify exhibit 3-1 on p. 40 to identify Safety Parameter Display System (SPDS) <u>algorithms portion</u> as important to safety software in the Data Processing System. 3. Modify exhibit 3-1 to identify software necessary to perform alternate protection system control actions as important to safety in Process Component Control System. 4. Remove "typical" from title of exhibit 3-1. 5. Add note to exhibit 3-1 stating the table provides guidance for other Nuplex 80+ systems and functions.

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9	Section 1.4.2 - Software Life Cycle. This section references IEEE 729-1983 but this standard is not included in Section 1.6 references.	The reference in 1.4.2 to IEEE 729-1983 has been updated to IEEE 610.12-1990. The new reference will be added to section 1.6.	CE will change the reference to IEEE 729-1983 in section 1.4.2 to IEEE 610.12-1990. This later standard will be added to section 1.6	11, 15	CE response and proposed change are acceptable.
10	Section 1.6.3 thru 8 - All of the documents in these sections should be issued.	CE does not consider the contents of coding standards to be at an appropriate level for SAR level review. The SPM will be revised to eliminate these references. In their place, section 3.4.2.1 will be revised to identify typical languages and contents of coding standards to be prepared by the CEO. The contents of these standards will include naming conventions, internal documentation guidelines, stylistic conventions, use of specific language features, tool usage guidelines, modularity guidelines. See comment #10	CE will delete the references 1.6.3 through 1.6.8. CE will revise section 3.4.2.1 to include a typical list of languages for which coding standards are to be developed and a description of the content of coding standards.	14, 30	CE response and proposed change are acceptable.

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#	NRC/LLL Comment	CE Response	Proposed Change	Pages	Resolution
11	<p>Section 3.1.2 - Scope. This section states, "This SQAP provides requirements for existing software which will not be modified provided it has an established satisfactory experience record." The process by which experience records are reviewed and the quantitative criteria by which a conclusion of satisfactory experience is assessed should be included in this section.</p>	<p>CE agrees that the SPM will include the criteria and review process for assessing existing software. Existing commercial software review process and criteria is identified in reference 1.6.9. Existing non-commercial software that has been in use at a NPP is accepted if the software has been maintained under an acceptable quality program with an active problem reporting and corrective action program, has acceptable code and documentation, and has previously been V&V'd. Other non-commercial software is accepted if the software documentation and code is judged acceptable by the design team and verification team. Acceptance of any existing software allows the code and documentation to be used without modification to meet requirements of this SPM. Acceptance of commercial software and existing NPP non-commercial software allows that software to be used without verification of the design documents or code. Verification is required for other existing software that is accepted.</p>	<p>Modify section 3.1.2 to describe three types of existing software. Cite reference 1.6.9 for existing commercial software and describe process and criteria for active NPP non-commercial software and other non-commercial software.</p>	22, 27	<p>CE response and proposed change are acceptable, provided that the active problem reporting and corrective action program required for existing non-commercial software in use at a NPP is also required to report to the Nuplex 80+ project during the software life cycle.</p>

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#	NRC/LLL Comment	CE Response	Proposed Change	Pages	Resolution
12	<p>Section 3.2.2.5 - Software Implementation Phase. This section states that all software shall be tested by the design team. This statement contradicts Item 19 of Section 4.2.2, "The V&V Process," which states that design team participation in tests is permitted as long as the designer is not directly responsible for the portion of the system to be tested. Testing should be a function of the Software Quality Assurance organization, which is independent of the design organization.</p>	<p>CE will assign the lead for system and integration software testing to the V&V team for protection and important to safety systems. The lead for unit testing of protection systems is also the V&V team. CE prefers to have a clear turnover point for software testing performed by the design team and the V&V team. For protection software that turnover point is after module testing and before unit testing. For important to safety software, that turnover point is after unit testing and before system testing. Important to availability and general purpose software is tested entirely by the design team, with review by the validation or requirements teams. CE considers this approach maximizes the use of all teams toward assuring reliability in systems of graded complexity. See comment #2 regarding the use of an independent SQA team.</p>	<p>Update section 3.2.2.5 and Exhibit 4-1 to reflect V&V team lead for testing.</p>	<p>26-29, 31-32 101</p>	<p>CE response and proposed change are acceptable.</p>
13	<p>Additionally, the same paragraph as above states that unit test procedures and reports are only required for software classified as protection. Software that is important to safety should also be included.</p>	<p>Important to safety units require detailed assembly performed by the designer. Unit testing provides a means for the designer to assure that the assembly has been done correctly.</p>			<p>CE response does not address the comment. CE agrees to modify the 2nd to last paragraph of section 3.2.2.5 to state "Unit test procedures are only required for software classified as protection or important to safety." This change is an acceptable response.</p>

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14	<p>Section 3.2.2.6 - Testing Phase. This section states that system tests shall be conducted by the CEO group. The SQA group should be in charge of testing and should be independent of the CEO group.</p>	<p>CE assigns the conduct of testing to the design and validation teams, as described in comment #12. An independent SQA group is not used. The V&V team is independent of the design team as described in section 2.</p>	<p>Section 3.2.2.6 will be revised to reference exhibit 4-1 for testing responsibility. This exhibit will show VT responsible for system testing of important to safety software as well as protection software.</p>	28, 101	<p>CE response and proposed change are acceptable.</p>
15	<p>Section 3.2.2.7 - Site Acceptance Test (SAT) Procedure. The SAT procedure is referenced in this section; however, there is no discussion of when this procedure is written relative to the software life cycle. There is a Test Plan developed during the implementation phase (3.2.2.5), but it is not clear whether the SAT is developed at that time. Incidentally, test plan development should start during the requirements phase; otherwise, the developers may find that there are no methodologies for adequately testing some of the requirements during the implementation phase.</p>	<p>CE agrees to clarify the start of test plan and procedure development during the requirements phase. Currently the SPM indicates the phase in which these items are completed.</p>	<p>Modify section 3.2.2.7 to identify that the test plan and SAT are initially developed in the requirements phase to support evaluating the testability of requirements. Move description of test plan in section 3.2.2.5 to section 3.2.2.2</p>	26-28, 29	<p>CE response and proposed change are acceptable.</p>

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16	Section 3.3.1 - Purpose (Documentation). This section references Exhibit 3-4, Tasks Required for Software Categories. Exhibit 3-4 indicates that software test plans are not developed until the implementation phase, which implies that requirements are to be developed without consideration of the capability to validate the implemented design against the requirements.	CE agrees to clarify the start of test plan development in the requirements phase. See comment #15	Modify exhibit 3-4 to show start of test plan in requirements phase.	43-44	CE response and proposed change are acceptable.
17	Section 3.4.2.1 - Coding Standards. The coding standards have not been issued, including Section 1.6.8, the C coding standard. Nevertheless, this section states that Section 1.6.8 is to be used as a guide for the other coding standards. The applicable sections must be developed and included in the SPM.	CE considers the coding standards to be at a level that is not appropriate for SAR review. General requirements for coding standards are addressed in comment #10.			CE response is acceptable.
18	<u>Section 3.4.2.3 - Documentation Standards.</u> This section states that all documents developed for the Nuplex 80+ System shall comply with the requirements for format and content described in Section 3.3. Section 3.3 does not address format and content, but references Section 7, Documentation.	CE agrees.	Section 3.4.2.3 will be revised to reference section 7 directly. Indirect references to section 7 in other places will be similarly replaced.	21, 24-25, 29, 31	CE response and proposed change are acceptable.

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19	<p>Section 7 only states that procedures, standards, conventions, and guides shall describe and define the requirements for determining the documentation required for different categories of software and the requirements for the content and format of required documentation, without identifying the procedures, standards, conventions, and guide. Section 7 does provide some guidelines regarding content of some of the documentation identified in that section. The developed guidelines should be incorporated into the applicable sections.</p>	<p>CE will remove the general reference to "procedures, standards, conventions, and guides." Instead, appropriate IEEE standards will be referenced for applicable documents described in section 7. CE prefers to retain section 7 as a separate section covering additional documentation requirements not covered in other sections of the SPM.</p>	<p>Remove sentence invoking procedures, standards, conventions and guides. Add IEEE standards to appropriate document descriptions in section 7 and in the reference section 1.6.</p>	123-126	<p>CE response and proposed change are acceptable.</p>
20	<p><u>Section 4 - Software V&V Plan</u>. This section introduces topics that are not specifically related to software verification and validation. For example, configuration management, test, and organizational definitions have been included in this section.</p>	<p>The software V&V plan is substantially the same as a plan made available to the NRC nearly a year prior to the issuance of the SPM. CE had received favorable comments from the NRC on that earlier plan. Some overlap exists between V&V and configuration management, test, organization matters. CE considers this overlap to be reasonable and helpful to the V&V reviewer.</p>			<p>CE response is acceptable.</p>

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21	Additional editing should be employed to eliminate grammatical errors and to ensure that all subjects have been adequately addressed.	CE finds a few cases where we recommend corrections.	Various minor changes in this section and other parts of the SPM.	10, 16, 18, 21-26, 30-34, 37, 41, 43, 48, 52-54, 58, 63, 69-71, 79, 84, 88, 90, 110, 130-131	CE response and proposed change are acceptable, with additional minor grammatical corrections noted: 1. CE will change occurrences of "Active Protection" class to just "Protection" class to unify this class name over the document. 2. CE will change occurrences of "New" software to "Original" software to unify this category name over the document.
22	<u>Section 4.1.4 - Reviewer Independence.</u> This section should emphasize managerial independence as well as development team independence. This clarification will resolve the inconsistency between independence as it is defined in this section, and as it is defined in Section 2. The review team should report to a manager who is not the manager for the software under review.	CE agrees. Section 4.1.4 has been revised to require the verification team to report to a different supervisor than the design and requirements teams. See comment #2.			CE response is acceptable.
23	Additionally, Exhibit 4-1 does not show managerial independence, only organizational independence, which is insufficient for ensuring truly independent review activities.	This independence is now adequately stated in sections 2.0 and 4.1.4. See comment #2.			CE response is acceptable.

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24	<p>Section 4.2.1.2 - Congruence. In Item 3 of this section, traceability applies to document revisions. This definition differs from the traceability of each requirement (requirements traceability) through design and implementation to a collection of software modules that implement that requirement. Traceability should be more rigorously defined to distinguish between documentation and requirements propagation.</p>	<p>The traceability matrix addresses the revision levels. See comment #7.</p>	<p>Reference new traceability matrix section from section 4.2.1.2.</p>	<p>50</p>	<p>CE response and proposed change are acceptable.</p>

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25	<p><u>Section 4.2.1.8 - Core Activities.</u> In Item a, there is an initial reference to Exhibit 4-2. The purpose of this exhibit is to describe a checklist that attests to the completion of an activity. The checklist does not provide for the identification of the configuration item for which the checklist applies. There may be a number of modules that will be required to meet several requirements, and each requirement may require several modules. As the task progresses, more detail is likely to be introduced and it is not clear that this checklist will be an effective media for changes in requirements, design, implementation, and testing activities. This poses several challenges, and it is not clear that the present system addresses these challenges. Additionally, this section does not adequately describe the use of Exhibit 4-2.</p>	<p>CE agrees that the use of the checklists is not clear in the SPM. The intent of the checklist is to prompt a reviewer to consider each of the listed aspects in the review of a particular software item. The checklist alone is not intended to serve the overall purpose described in the comment. The overall review is accomplished by the variety of techniques described in the SPM.</p> <p>CE will clarify in the SPM that the checklist section, corresponding to the phase of the software item, will be filled in upon completion of review of that item. To further clarify this, Exhibit 4-2 will be broken out into separate checklists, one for each phase, to be completed following the review of any particular software item created in that phase. The item name and version will be identified on the checklist.</p>	<p>Clarify completion of the appropriate checklist for each software item. Break out Exhibit 4-2 into several checklists, one for each phase. Add software item name and version to top of each checklist.</p>	<p>52, 68, 76, 78, 102- 105, 105a- 105d</p>	<p>CE response and proposed change are acceptable.</p>
26	<p><u>Section 4.2.5.2 - Traceability.</u> This section should address requirements traceability instead of revision traceability and personnel responsibilities.</p>	<p>CE considers that this section would be more appropriate under configuration management description in section 3.2.2. Requirements traceability is covered as shown for comment #7.</p>	<p>Delete item 1, transfer material and reformat as necessary in section 3.2.2. Delete section 4.2.5.2.</p>	<p>24, 57, 58</p>	<p>CE response and proposed change are acceptable.</p>

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27	Section 4.6.2.4 - Hardware Tests. The intent of Part 2 of this section is unclear.	CE agrees to clarify item 2.	Item 2 will be revised to read "Each test <u>procedure</u> will be <u>thoroughly documented</u> to allow an independent party to perform the test."	73	CE response and proposed change are acceptable.
28	Section 4.7.8 - STRR. The quality of this section is less than that of earlier sections. For example, Item 3.e, page 89, states, "This section summarizes verbally the test results." It is assumed that the author intended to say that the test results will be documented in a narrative format.	CE agrees to clarify item 3.e.	Item 3.e. will be revised to read "This section summarizes the test results <u>in narrative format</u> ."	89	CE response and proposed change are acceptable.
29	Further, in Item 4, the document states, "The Test Report Satisfies the following set of questions ..." The set of questions have been omitted from this section.	CE agrees to clarify item 4.	Item 4 will be revised to read "The test report shall describe every step taken during the test and the test results. This description shall be complete enough to repeat the process and thoroughly correlate new results with original."	89	CE response and proposed change are acceptable, provided the proposed change is revised to read: "The test report shall <u>document</u> every step taken during the test and the test results. This description shall be complete enough to repeat the process and thoroughly correlate new results with original <u>results</u> ."

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30	<p>Section 4.8.1 - Introduction (System Validation Testing). Part 2 of this section states, "Failure performance testing is executed on a functional operations basis." The intent of this sentence is unclear, and should be clarified to eliminate ambiguities in meaning.</p>	<p>Failures to be accommodated by the software will be described in the software design requirements. This description will include the effect of the failure on system functional operations. The validation test shall assure that system functional operations during failures are as described by the requirements.</p>	<p>Section 7.3 on software design requirements documents will be clarified to include the description of failures to be accommodated in the software. Item 2 of 4.8.1 will be revised to read, "Failures to be accommodated by the software shall be tested to assure that resulting functional operations are as described by the software design requirements."</p>	90, 124	<p>CE response and proposed change are acceptable provided the word "failures" in the proposed change is changed to "abnormal conditions."</p>
31	<p>Further, in Item 4, there is some ambiguity in the meaning of "Transient tests are to executed ..." The phrase implies that the tests are transient, or that transients are to be tested.</p>	<p>Comment applies to item 3. CE agrees to clarify item 3.</p>	<p>Item 4 will be modified to read, "Tests are executed to validate system functional operations during transient conditions."</p>	90	<p>CE response and proposed change are acceptable, provided "input signal" is inserted before "transient conditions" in the proposed response.</p>

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#	NRC/LLL Comment	CE Response	Proposed Change	Pages	Resolution
32	<p><u>Section 5.2.3.2 - Configuration Control.</u> An identified format is described in Page 109. the format indicates that there are three number fields: FF, MM, and RR. It is inferred from the text that MM and RR are set to zero (0) whenever the value of FF is changed. The text should explicitly describe the relationships between the three revisions identifiers.</p>	<p>CE agrees to clarify the resetting of MM, and RR.</p>	<p>MM and RR are reset to zero when FF changes. RR is reset to zero when MM changes.</p>	<p>109</p>	<p>CE response and proposed change are acceptable.</p>
33	<p>Further, Section 5.2.3.1 states that each CEO originates the identification scheme [for all software code and documentation]; yet, Section 5.2.3.2 stipulates an identification scheme for software documentation and source and object code. The inconsistency between these two sections should be resolved.</p>	<p>Section 5.2.3.1 is intended to require the CEO to develop an identification scheme that relates corresponding versions of requirements documents, design documents, code, test procedures, etc. The identification scheme relates combinations of software items to form a specifically identified configuration. Section 5.2.3.2 is intended to provide a numbering format for uniquely identifying code versions. This code numbering is part of the overall configuration identification scheme developed by the CEO as described in 5.2.3.1. CE agrees to clarify this relationship.</p>	<p>Revise section 5.2.3.1 to require that the configuration identification scheme relates code items as they are identified by the numbering scheme in section 5.2.3.2.</p>	<p>108</p>	<p>CE response and proposed change are acceptable, provided that the title of section 5.2.3.2 is changed from "Configuration Control" to "Configuration Item Numbering Method."</p>

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34	Finally, the identification scheme for the other configuration items listed in Section 5.2.3.2 has not been adequately described.	Configuration identification schemes should be developed specifically for each system. The SPM encompasses a widely diverse group of the Nuplex 80+ systems, that vary in complexity, size, software architecture, and available tools. A generalized configuration identification scheme will not be suitable to all. The SPM does not describe a generalized scheme, or all of the system specific schemes. Instead, section 5.2.3 adequately describes the attributes of the configuration identification scheme that are to be included in each system specific scheme.	Clarify system specific development of configuration identification scheme in section 5.2.3.2	108	CE response and proposed change are acceptable.
35	<u>Section 5.2.3.2.1 - Software Change Request</u> . Is the software change request (SCR) preceded by a Software Problem Report (SPR)? An SPR should be generated for every perceived problem during the software life cycle for which some formal problem resolution is requested. If an SPR reporting mechanism is used to generate the SCRs, then this reporting mechanism should be described in this section or in a preceding section.	The vehicle for identifying a problem with the software at any time during the software life cycle is the Test Exception Report. CE will clarify this in the SPM.	Section 8.0 on Problem Reporting and Corrective Action will be revised to apply to all phases of the software life cycle. The TER (exhibit 8-1) will be referenced from other appropriate places in the SPM to clarify its use in identifying problems.	69, 75, 110, 119, 126, 130	CE response and proposed change are acceptable.

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36	<p>Section 6.2.2 - Operations and Maintenance. This section does not formally address error reporting procedures. For example, there should be a discussion about SPRs. Part b states that, The CEO supervisor shall distribute the Computer Program Error Notification [CPEN] form ... " As in Section 5.2.3.2.1, there should be an SPR that precedes the distribution of the CPEN. An SPR provides the initial information that will be used to decide the appropriate remedial actions, to include the issuance of a CPEN. Section 8.2, Problem Reporting, allows for a "comment record", which is a document that explains problems in verification reviews, and a "Test Exception Report", which is used for validation tests. Nevertheless, there does not appear to be a mechanism for the developer or user to formally report problems. For example, a developer, using third-party software to test software modules, traces a problem to the use of the third-party software. Since the problem originated in the third party software, it cannot be classified as a verification review problem or a validation test problems. Additionally, the perceived problem may not be real, which means that no SCR or CPEN should be issued.</p>	<p>See comment #35. The section should also describe that problems reported are first documented with a Test Exception Report, and the CPEN is distributed after the CEO has determined that the TER does, in fact, represent a defect in a delivered version of the software.</p>	<p>Modify section 6.2.2 to identify the TER as the means of identifying problems to the CEO. Clarify the CPEN is issued upon determination that the TER does, in fact, represent a defect in the software.</p>	119	<p>CE response and proposed change are acceptable.</p>

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37	Section 7.6.1 - Software V&V Plan. The second paragraph incorrectly references Section 3.3.2.3, Software Requirements Phase. The correct reference is Section 3.2.2.3.	CE agrees.	Revise section 7.6.1 to reference section 3.2.2.3.	125	CE response and proposed change are acceptable.
38	Section 7.6.2 - Software V&V Report. This section states, "It shall be an ongoing compilation of all validation test results, problem reports and corrective actions (Section 3.7) ..." Section 3.7 describes tools, techniques, and methodologies, which seem unrelated to the quote.	CE agrees. The appropriate reference is section 8.0, not 3.7.	Revise section 7.6.2 to reference section 8.0.	125	CE response and proposed change are acceptable.